

**NAVAL FIGHTER NUMBER FIFTY - FIVE**

**McDONNELL DOUGLAS**

**A-4M SKYHAWK**



**BY STEVE GINTER**

**INCLUDES INFORMATION ON THE A-4N, A-4AR, A-4KU, AND AF-1**



## INTRODUCTION

The last version of the Skyhawk series to be built, the A-4M Skyhawk II, was obviously the most capable. While the original Skyhawks were designed as a lightweight delivery platform for nuclear weapons, the "Mighty Mikes" were refined into the ultimate close air support weapon to protect the "Mud Marines." With the Hughes Angle Rate Bombing System installed it was arguably the world's best close air support jet aircraft ever built.

Ironically, the A-4M was the only Skyhawk version, other than the A-4A, to not see combat. The A-4M first entered service in 1971 as the Vietnam War was grinding to a halt and left front line service in February 1990 prior to the Gulf War. However, foreign versions of the A-4M did see combat in the Middle East. These were the Israeli A-4Ns and the Kuwaiti A-4KUs. Marine A-4Ms stayed forward-deployed in Japan throughout their active service life in readiness for a war that never was.

## IN TRIBUTE TO HARRY GANN

Shortly after the death of Harry Gann, the first Skyhawk book in this series, Naval Fighters Number Fifty-

One, The Douglas A-4E/F Skyhawk in Navy Service, was produced and dedicated to Harry Gann. I now offer this book in tribute to Mr. Gann's photographic zeal. Virtually all aerial photos (including all photos on the back cover) and many of the ground shots used in this volume are his. Without his professionalism this book would never have been possible.

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## FRONT COVER:

Last Skyhawk built, A-4M 160264, during a Hughes AGM-65E Maverick test on 14 November 1979 while assigned to NAS China Lake. This aircraft was known as the "Easter Egg" because of its special paint scheme. The 2960 on the aft fuselage stands for 2,960th and last Skyhawk built. (USN)

## BACK COVER:

Right side top to bottom, VMA-214 Blacksheep A-4M 160044. VMAT-102 Skyhawks A-4M 159488 with six bombs on the centerline in 1976. Two VMA-324 A-4Ms (158158 and 158160) in 1971. VMA-324 was the first active duty squadron to receive the Mighty Mike. Two low-visibility VMAT-102 A-4Ms (158168 and 160029) in 1984. Two VMA-211 Avenger A-4Ms (159785 in background) in 1977. (all photos Harry Gann)

Left side top to bottom, Zuni missile launch from VMA-324 A-4M in 1971. Original markings of A-4M 160264, the last A-4 built in 1979. VMA-331 Bumblebees A-4M 158185 in 1976. Four VMA-311 Tomcats A-4Ms (160036, 158173, 159476 and 160042) in 1977. VMA-223 Bulldogs A-4Ms (158158 and 159483) in 1978. (all photos Harry Gann)

## A-4M PRODUCTION, 162 AIRCRAFT

BuNos: 158148 - 158196 (49)  
158412 - 158435 (24)  
159470 - 159493 (24)  
159778 - 159794 (17)  
160022 - 160045 (24)  
160241 - 160264 (24)

A-4M prototype: A-4F 155042

## McDONNELL DOUGLAS A-4M/N SKYHAWK II



## BACKGROUND

On 17 May 1963, the Bureau of Aeronautics announced a design competition for a new light attack aircraft (VAL) that would replace the Skyhawk series of aircraft. The winner of this competition was the Vought A-7A Corsair II, which served with distinction alongside the Skyhawk throughout the conflict in South East Asia. BuAer intended to reequip both Navy and Marine A-4 squadrons with the A-7, but the demands of the Viet Nam War and the resistance to the new, more sophisticated A-7 by the Marines, postponed Marine induction of the A-7 Corsair until an alternate solution was discovered. The solution was the A-4M Skyhawk made possible by the development of the Pratt & Whitney J52-P-408A engine. This new version of the J52 provided a 20% increase in thrust over previous models with no appreciable increase in fuel consumption.

The Marines' mission for the light attack (VAL) aircraft was that of short range close air support. The A-7 would cost more to purchase and maintain than an improved A-4 and

had mission capabilities far in excess of those required by the Marines. The new engine made it possible to operate from 4,000 foot runways with a full weapons load. In addition, the engine's 11,200 pound thrust rating allowed for an increase in maneuverability, rate-of-climb and acceleration.

Initial production A-4Ms offered the following improvements: Internal and external fuel load of 1,800 gallons, maximum weapons load of 9,155 pounds, ammunition increased from 100 to 200 rounds per gun, canted refueling boom to allow installation of a wider angle target acquisition system, IFF tail antennae, square-tipped fin and rudder with increase in area, a braking parachute, Escapac 1G-3 seat, self-contained engine starter, 20kVA generator (60% increase in electrical power) and a redesigned and enlarged canopy with bullet-resistant windscreen.

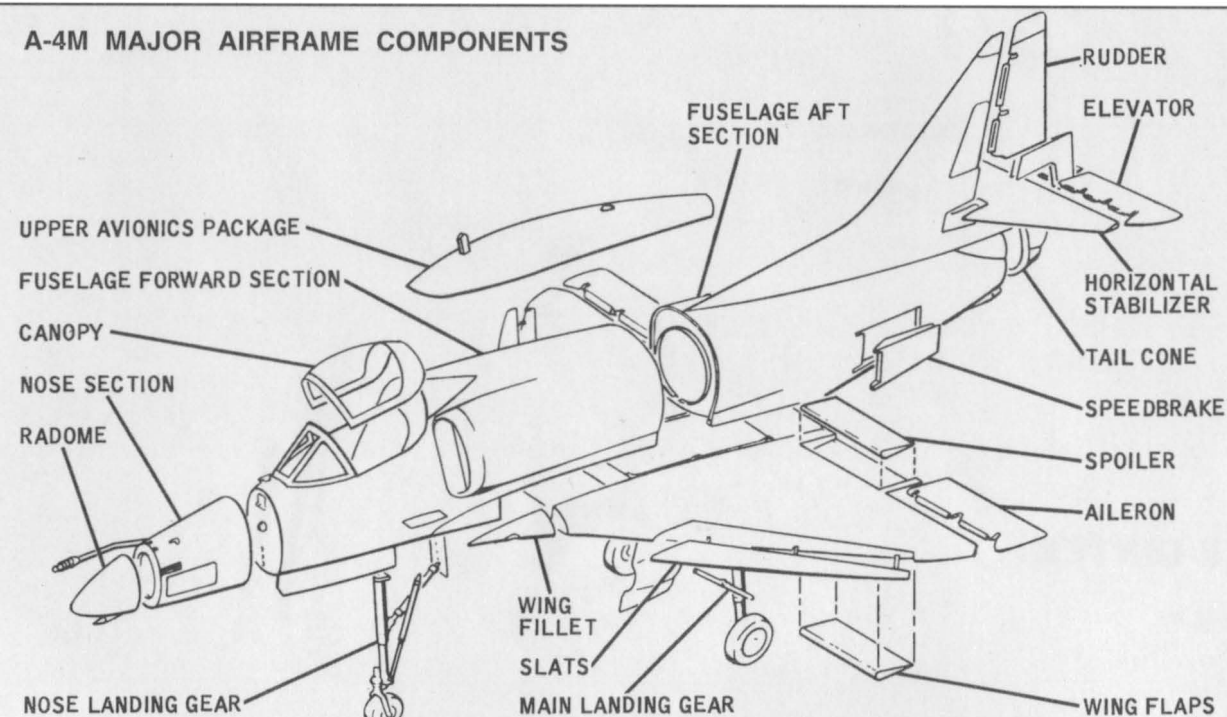
Continued development of the "M" over its ten year production run led to consideration of changing the aircraft's designation to A-4Y. This of course did not happen, but the added improvements are listed below.

Above, prototype A-4M 155042, a modified A-4F, takes off on its first flight from Palmdale, CA, on 10 April 1970. (MDAC via Craig Kaston)

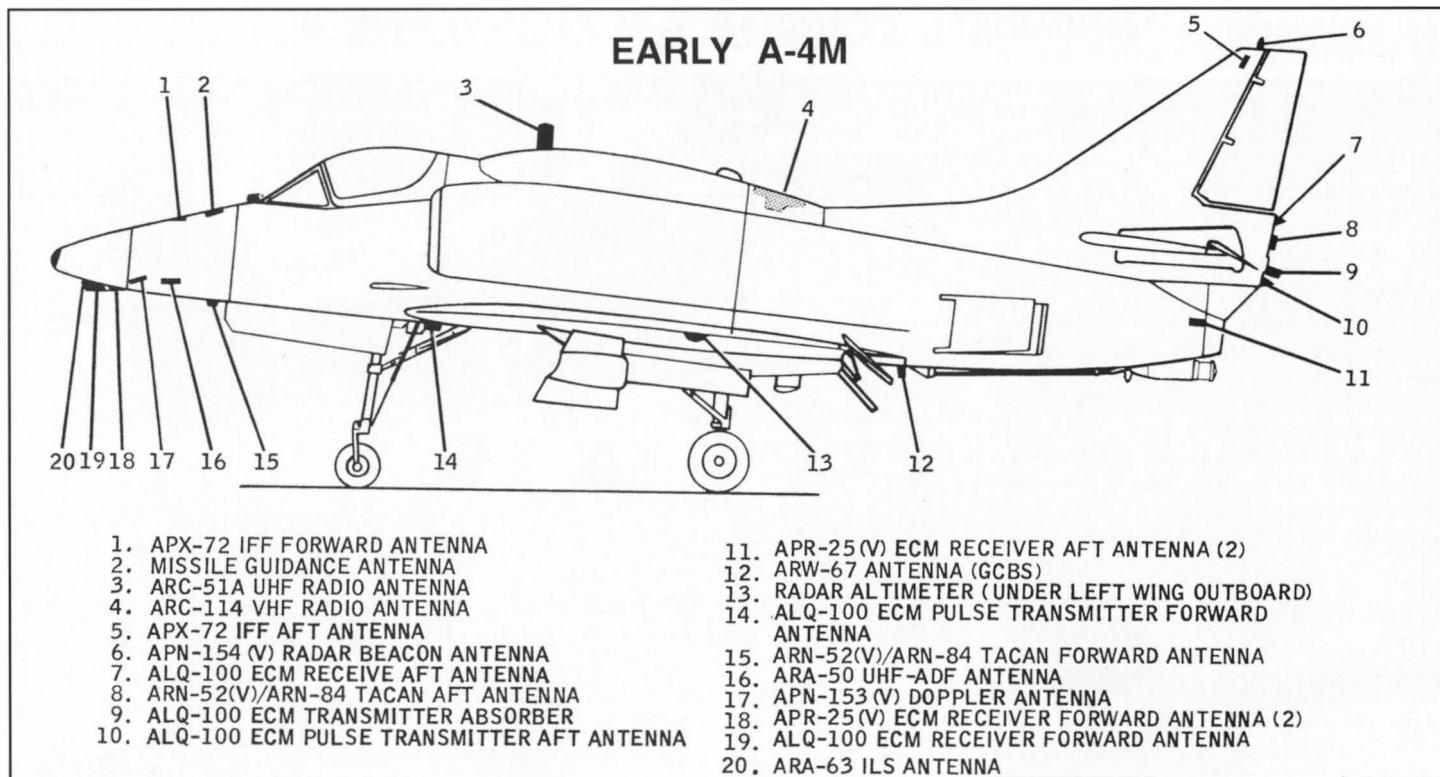
In Fiscal 1974, a new heads-up (HUD) cockpit arrangement was installed which featured an Elliott 546 HUD with air-to-air and air-to-ground modes. In 1977, the Hughes Angle Rate Bombing System (ARBS) was added. This enabled the Skyhawk to utilize the AGM-65E Maverick and other laser-guided weapons against hard targets. After the system/aircraft fit had been established, the ARBS system was retrofitted to all previous built A-4Ms.

In its final form the A-4M had a fin tip pod with an ALR-45 homing and warning antenna and two more ALR-45 antennas flanking the ARBS system in the nose. Below this in the nose were an ALQ-126 low-band antenna on the right and a mid-band ALQ-126 on the left. Also located in the nose between the two ALQ-126 antennas was an ARA-63 ILS antenna. An ALR-50 L-band antenna was added to the nose gear door. The

## A-4M MAJOR AIRFRAME COMPONENTS







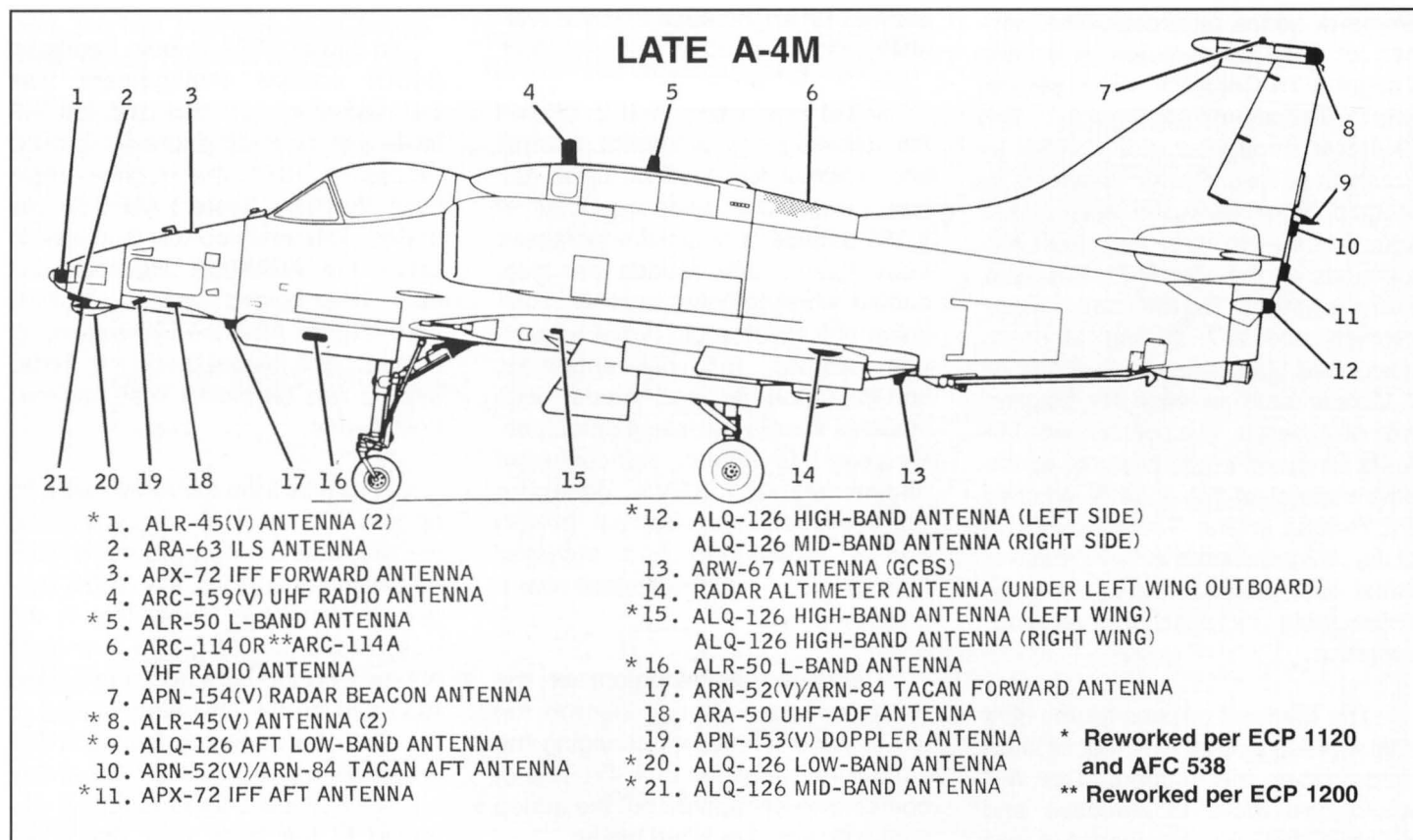
hump ended up with (front-to-back) ARC-159 UHF radio antenna, ALR-50 L-band antenna, and ARC-114/114A VHF radio antenna. On the left side of the sugar scoop was an ALQ-126 high-band antenna and on the right was an ALQ-126 mid-band

antenna. The APX-72 IFF aft antenna was located above the sugar scoop followed by an ARN-52/ARN-84 TACAN aft antenna with an ALQ-126 aft low-band antenna. The differences between the initial production aircraft (above) and final configura-

tion (below) are illustrated here.

#### FIRST FLIGHT

Two A-4Fs, Bureau Numbers 155042 and 155049, were converted to A-4M configuration with 155042



making the first flight on 10 April 1970. Douglas test pilot Walt Smith took off from the Douglas facility at Palmdale, CA, for a one hour check flight. Smith explored the aircraft's flight characteristics and its major systems. Most of the flight was conducted at an altitude of 30,000 feet

with the prototype M reaching a maximum speed of .9 Mach. When Smith landed he was congratulated by Major General Robert Owens Commanding General 3rd MAW (Marine Aircraft Wing) El Toro, CA.

Above, prototype A-4M in flight with instrumented test boom attached to the refueling probe in 1970. Large USMC emblem was applied to the forward fuselage below the windscreen as well as the words A-4M Skyhawk. The tip of the nose was black. (MDAC) Below, right side of prototype A-4M 155042. (MDAC)







#### FIRST DELIVERY

The first production A-4M was BuNo 158148. It was turned over to the Marine Corps in October 1970 in a ceremony at the Douglas plant. At the brief ceremony, Wellwood E. Beall, executive VP of Douglas, presented the first A-4M log books to

Capt K. B. Mattson, the Navy's plant representative at Douglas. Mattson, in turn, gave the log books to LtCol Gene Russell from the Naval Air Test Center (NATC), Patuxent River, MD. Russell then ferried the new A-4M to NATC where it took part in Navy Bureau of Inspection and Survey (BIS) trials.

Above, first production Skyhawk II accepted by the Marines was A-4M 158148 seen here shortly after roll out. (MDAC) Below, 158148 with USMC emblem added is turned over to LtCol Russell by Capt Mattson while BGen L. E. Brown (assistant Wing Commander 3rd MAW) and Douglas officials look on. (MDAC)

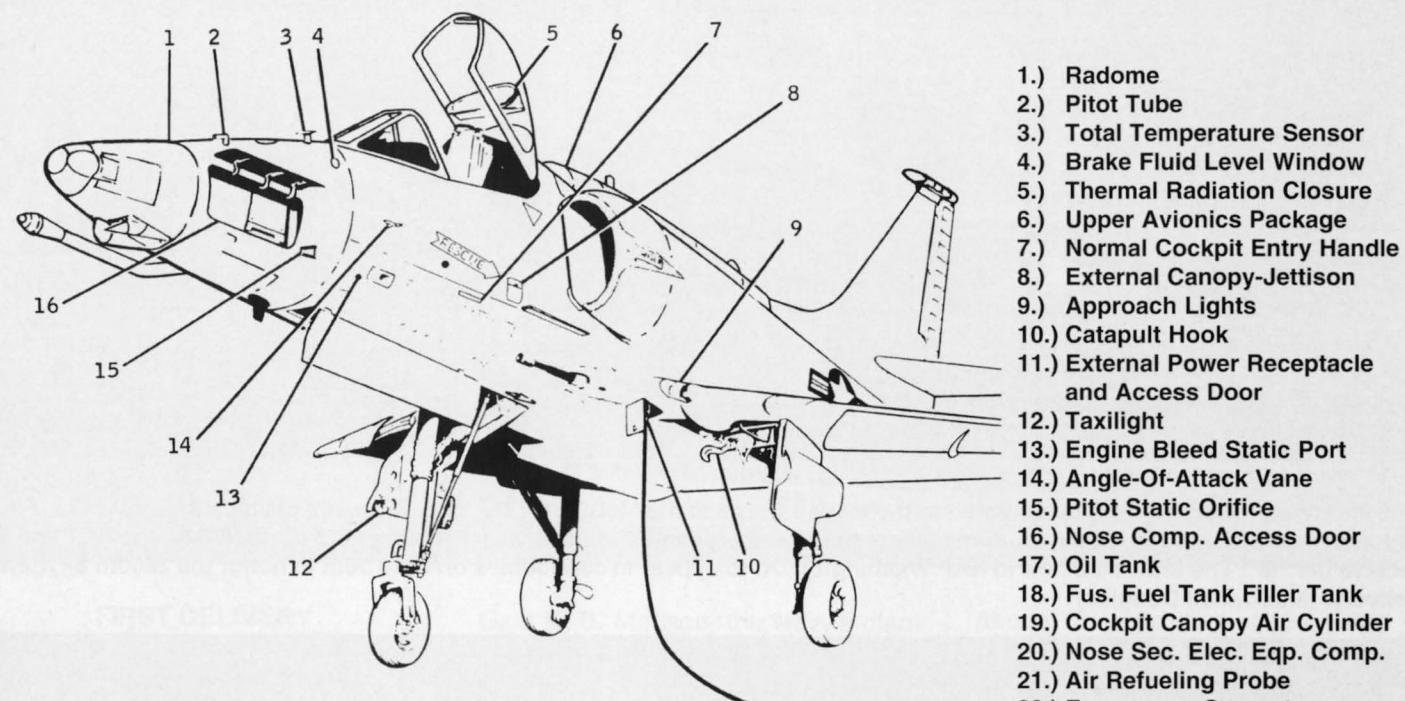


The first five production aircraft delivered to the Marine Corps at the McDonnell Douglas Palmdale plant on 16 April 1971. Four of the aircraft were to be ferried MCAS Yuma where they were presented to LCol G. J. Ertimeier, CO of VMA-324, the first unit to receive the "M". The fifth A-4M flew to NAF Washington DC to appear in ceremonies on April 20th to honor the 2500th Skyhawk delivery. (McDonnell Douglas)



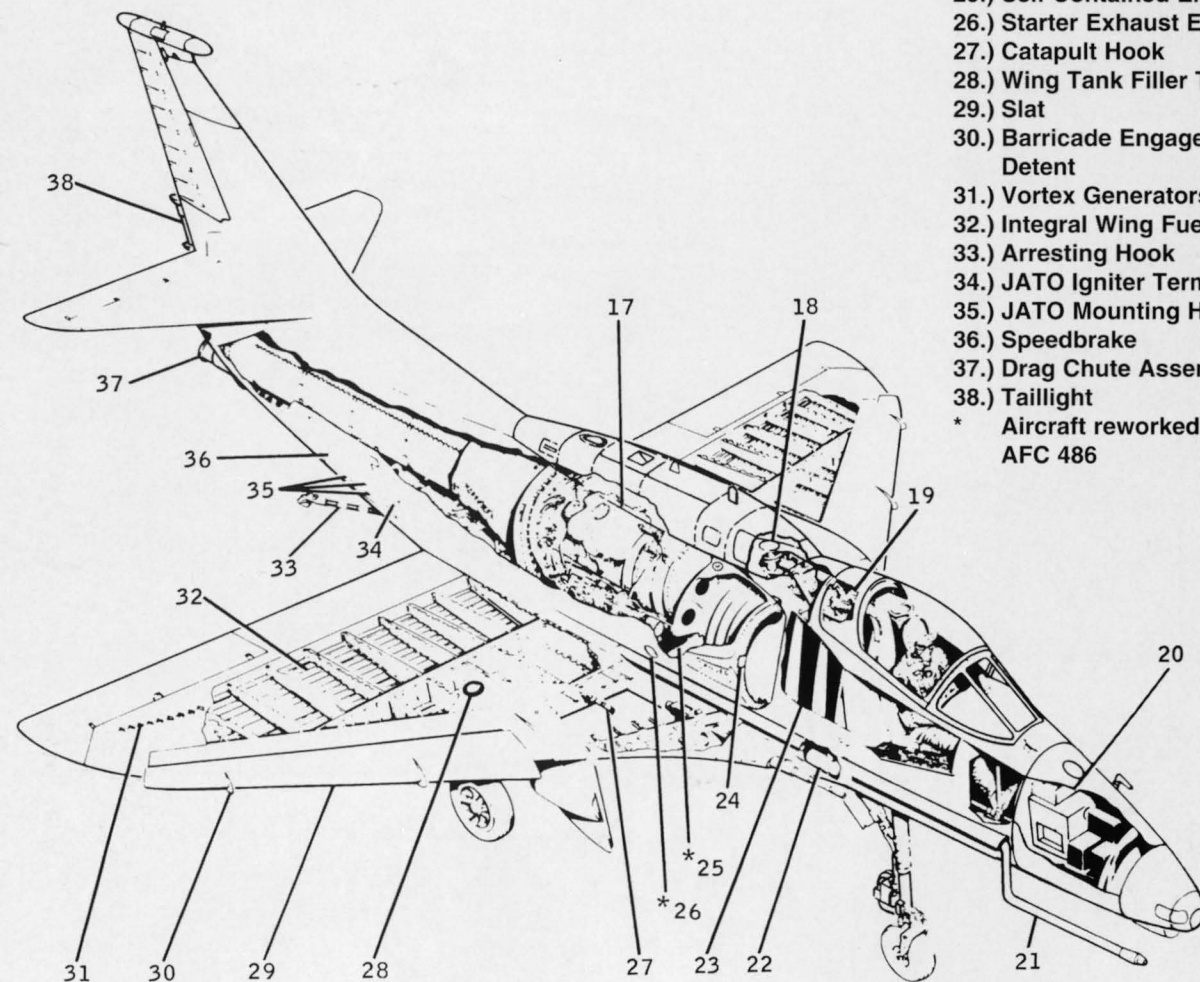


## A-4M GENERAL ARRANGEMENT

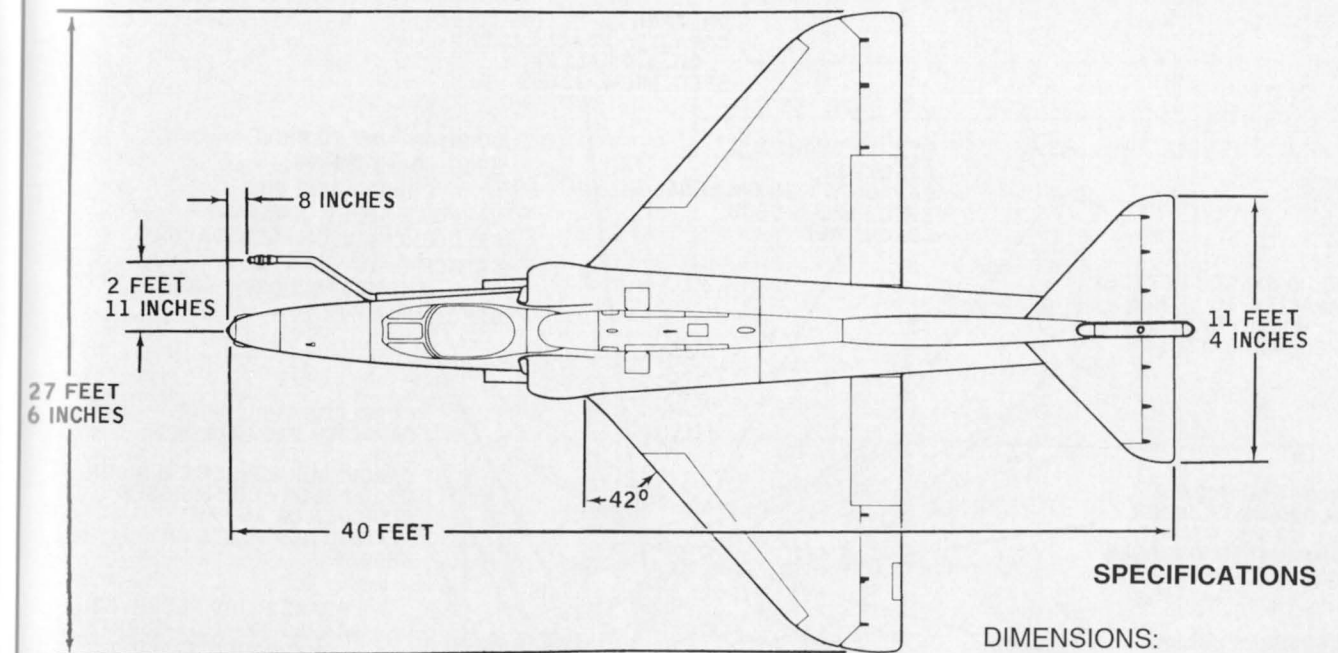


- 1.) Radome
- 2.) Pitot Tube
- 3.) Total Temperature Sensor
- 4.) Brake Fluid Level Window
- 5.) Thermal Radiation Closure
- 6.) Upper Avionics Package
- 7.) Normal Cockpit Entry Handle
- 8.) External Canopy-Jettison
- 9.) Approach Lights
- 10.) Catapult Hook
- 11.) External Power Receptacle and Access Door
- 12.) Taxilight
- 13.) Engine Bleed Static Port
- 14.) Angle-Of-Attack Vane
- 15.) Pitot Static Orifice
- 16.) Nose Comp. Access Door
- 17.) Oil Tank
- 18.) Fus. Fuel Tank Filler Tank
- 19.) Cockpit Canopy Air Cylinder
- 20.) Nose Sec. Elec. Eq. Comp.
- 21.) Air Refueling Probe
- 22.) Emergency Generator
- 23.) Fuselage Fuel Tank
- 24.) Air Refueling Probe Light
- 25.) Self Contained Eng. Starter
- 26.) Starter Exhaust Exit
- 27.) Catapult Hook
- 28.) Wing Tank Filler Tank
- 29.) Slat
- 30.) Barricade Engagement Detent
- 31.) Vortex Generators
- 32.) Integral Wing Fuel Tank
- 33.) Arresting Hook
- 34.) JATO Igniter Terminal
- 35.) JATO Mounting Hooks
- 36.) Speedbrake
- 37.) Drag Chute Assembly
- 38.) Taillight

\* Aircraft reworked per A-4 AFC 486



## A-4M PRINCIPAL DIMENSIONS



### SPECIFICATIONS

#### DIMENSIONS:

Length	41.3 Feet
Wingspan	27.5 Feet
Height	15 Feet
Wheel Base	11.7 Feet
Wing Area	260 Sq Feet

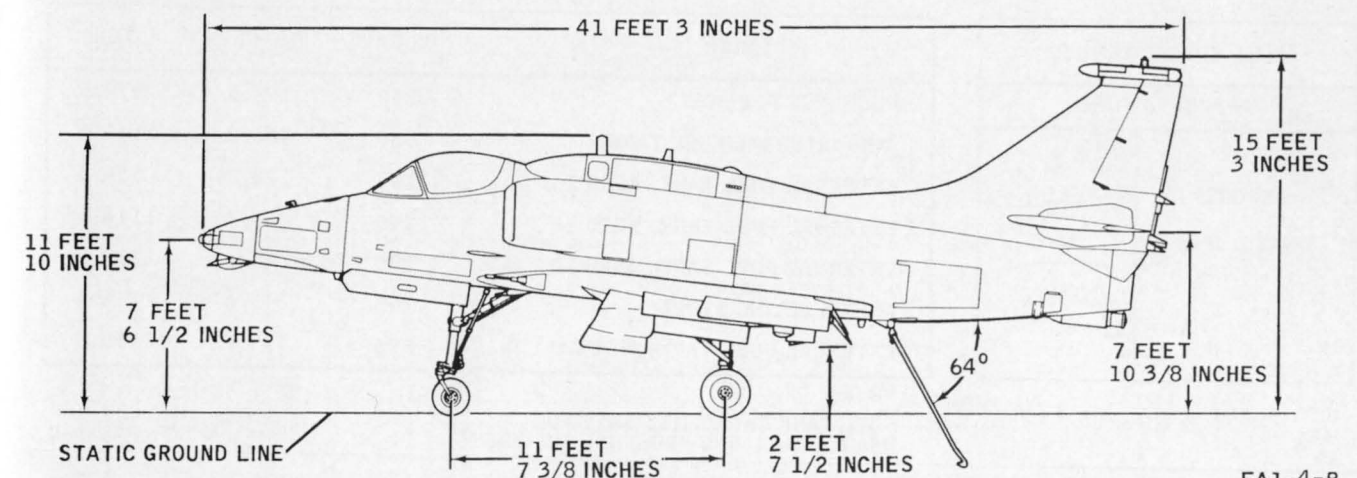
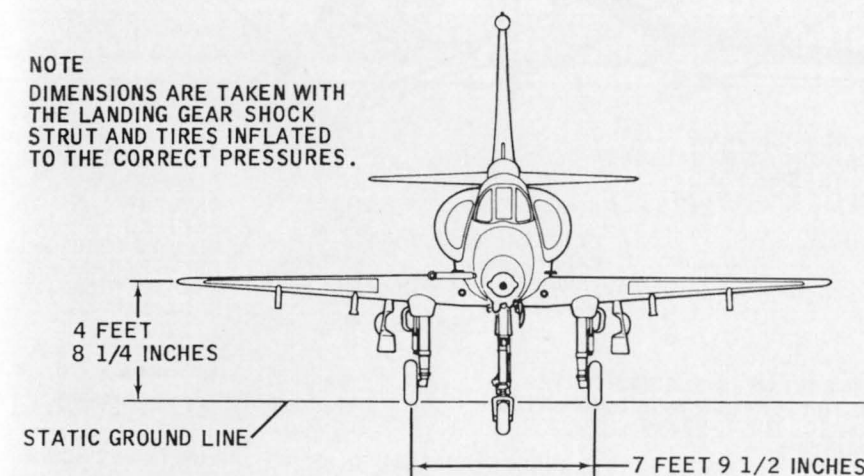
#### WEIGHTS:

Empty	10,400 lbs
Maximum Takeoff	25,500 lbs

#### PERFORMANCE:

Weapons Load	9,195 lbs
Speed	700 mph
Takeoff Distance at Max Takeoff Weight	3,100 Feet
Landing Ground Roll at 12,800 lbs	1,850 Feet
ENGINE: Pratt & Whitney J52-P-408	
Thrust	11,200 lbs

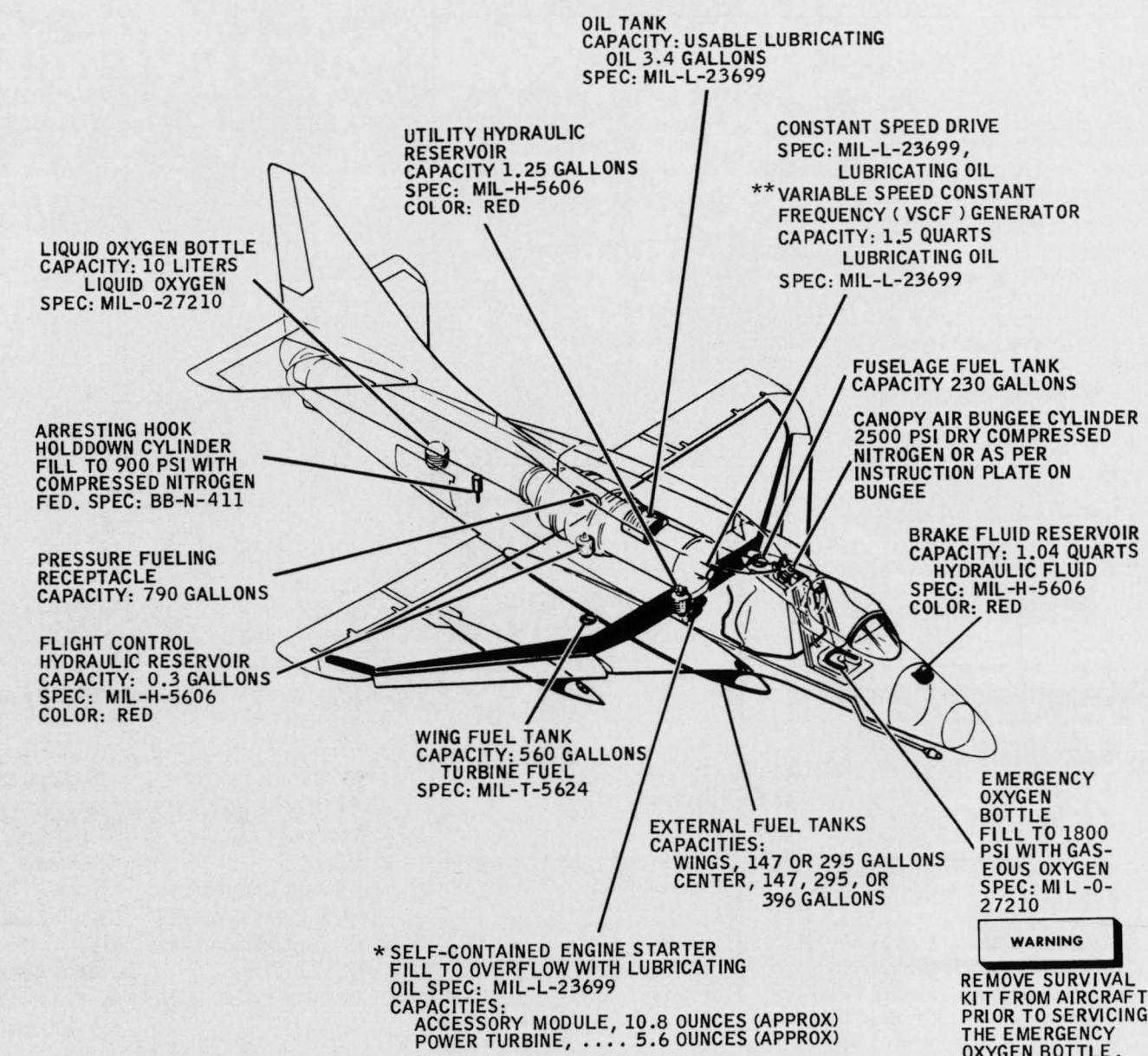
NOTE  
DIMENSIONS ARE TAKEN WITH  
THE LANDING GEAR SHOCK  
STRUT AND TIRES INFLATED  
TO THE CORRECT PRESSURES.



FA1-4-B



SERVICING DIAGRAM



FUEL SPECIFICATIONS		
APPROVED FUEL		
ASHORE		AFLOAT
JP-4	JP-5	JP-5

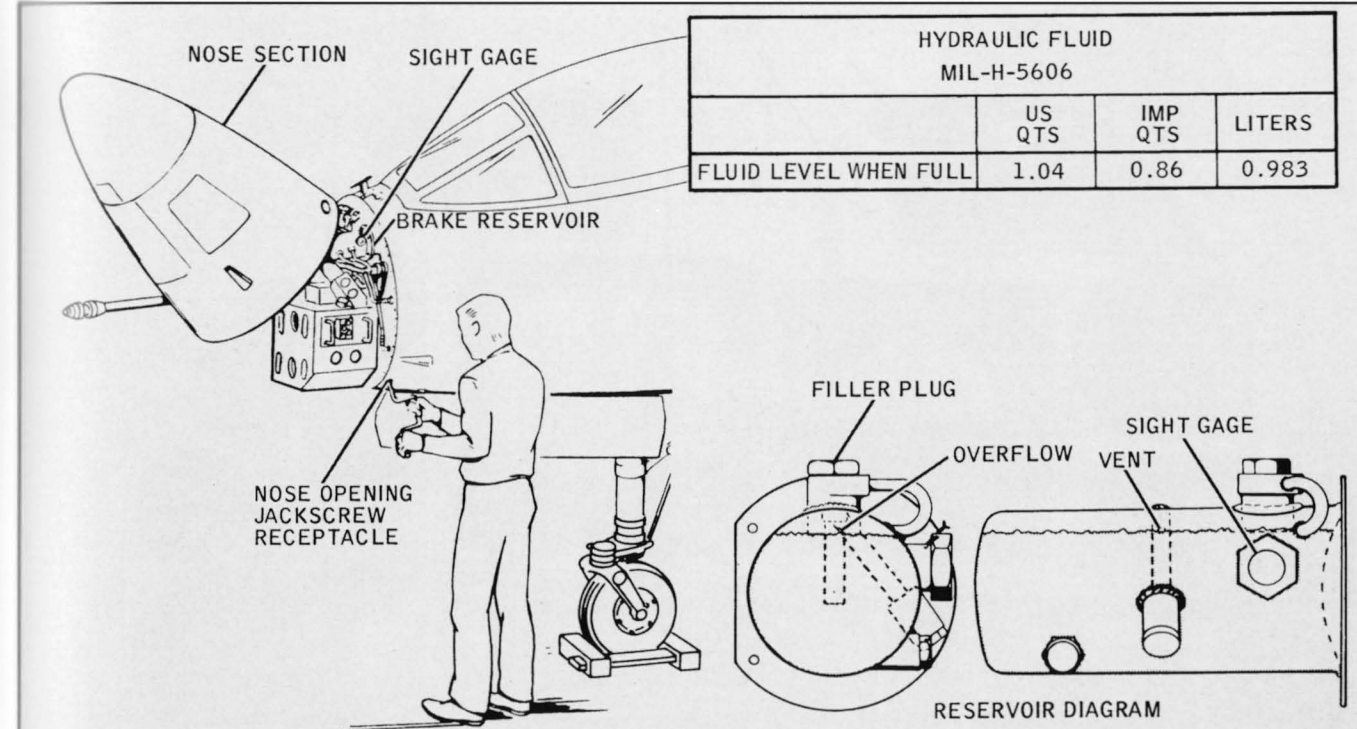
TANKS	US GAL.	IMP GAL.	LITERS
FUSELAGE FUEL CELL	230	191.5	870.5
WING INTEGRAL FUEL TANK	560	466.2	2119.6
EXTERNAL FUEL TANK, AERO 1C	147	122.3	556.3
EXTERNAL FUEL TANK, AERO 1C	295	245.6	1116.5
EXTERNAL FUEL TANK, AERO 1D	295	245.6	1116.5
AIR REFUELING STORE	295	245.6	1116.5
EXTERNAL FUEL TANK, (400 GALLONS)	396	329.7	1498.8

NOTE:  
FUEL TANK CAPACITIES BASED ON USABLE FUEL AND PRESSURE FUELING.

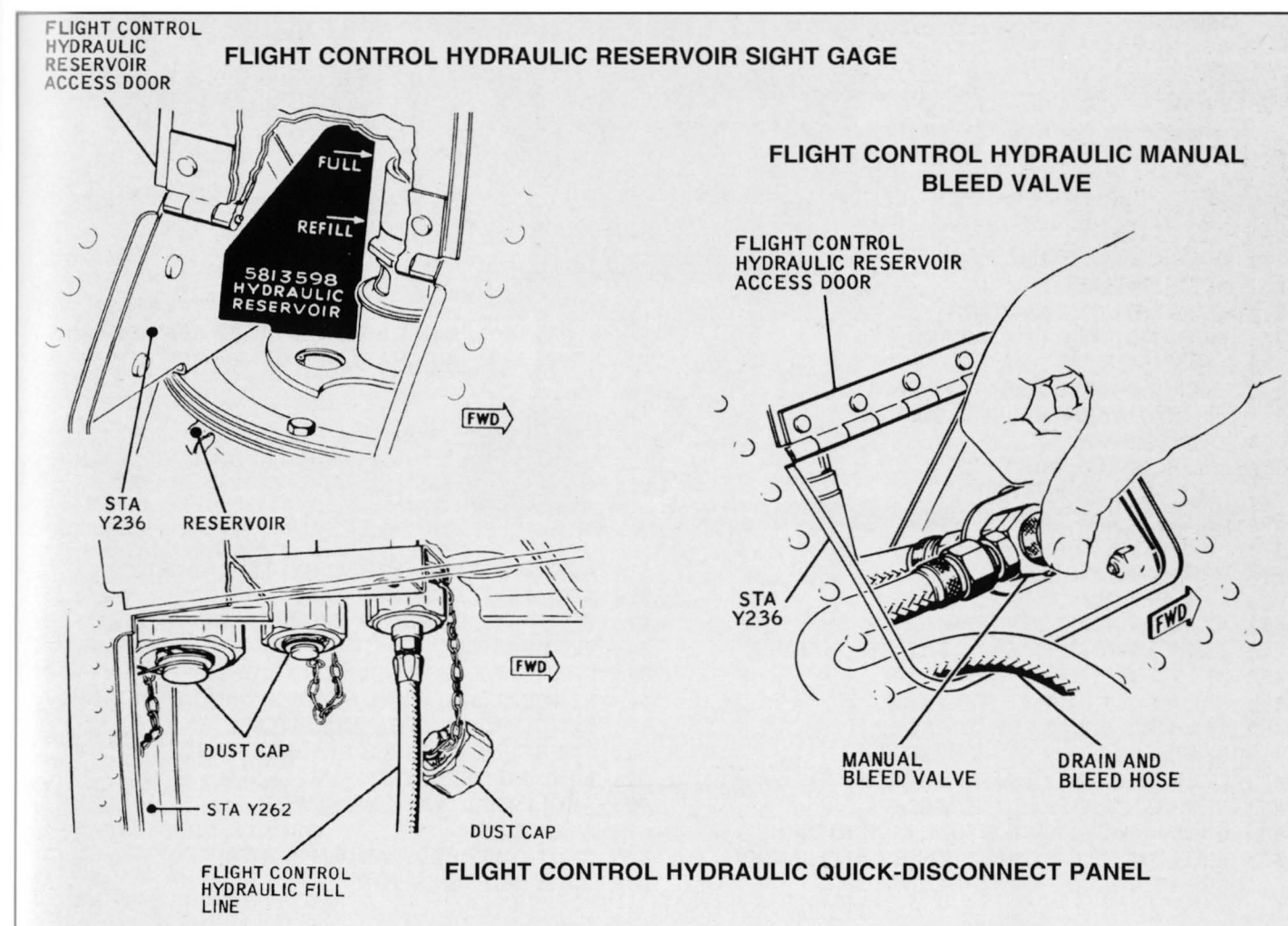
FA1-8-D

\*Aircraft reworked per AFC 486.  
\*\*Aircraft reworked per ECP 1126.

BRAKE RESERVOIR SERVICING

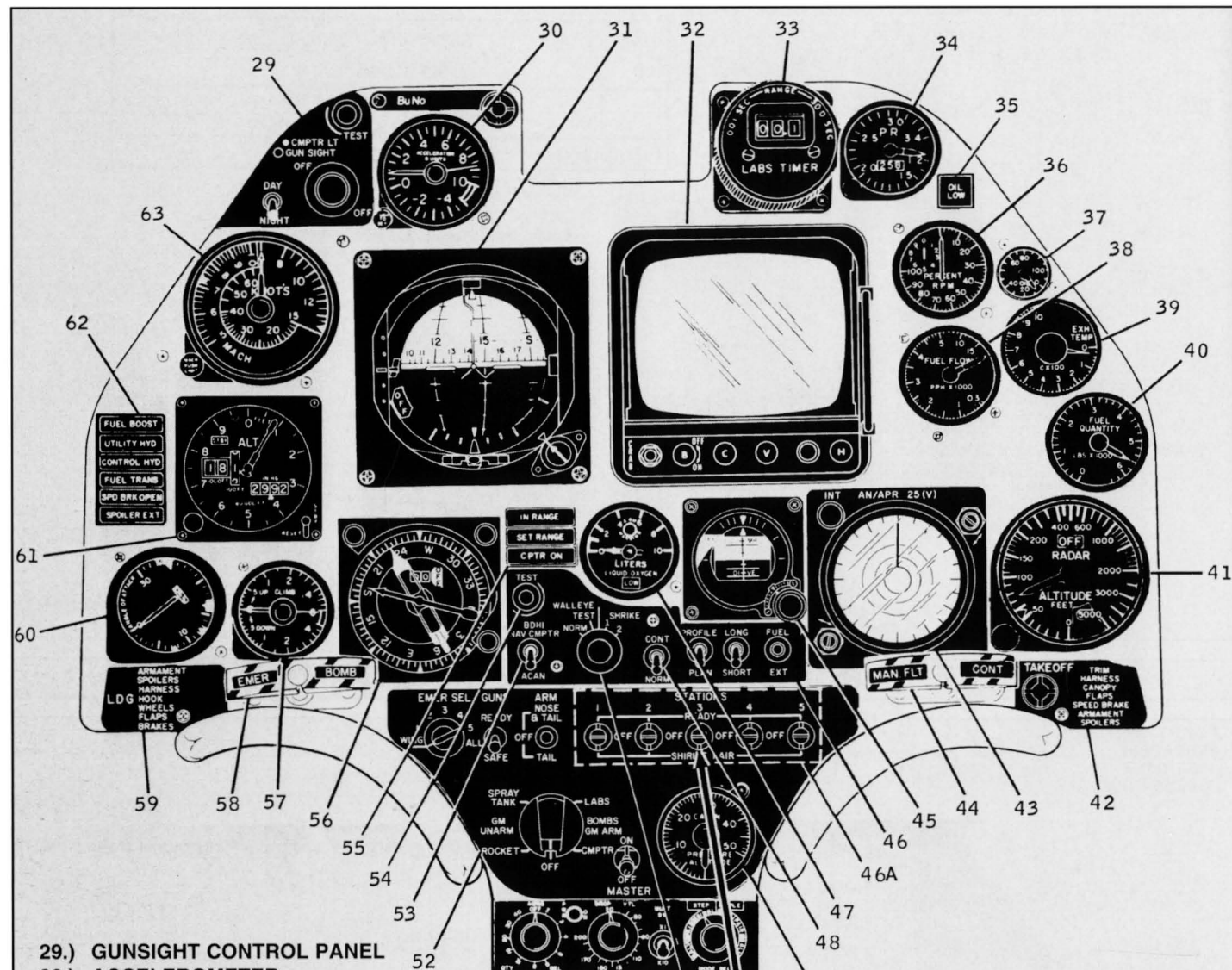


FLIGHT CONTROL HYDRAULICS SERVICING





# EARLY NON-HUD A-4M INSTRUMENT PANEL



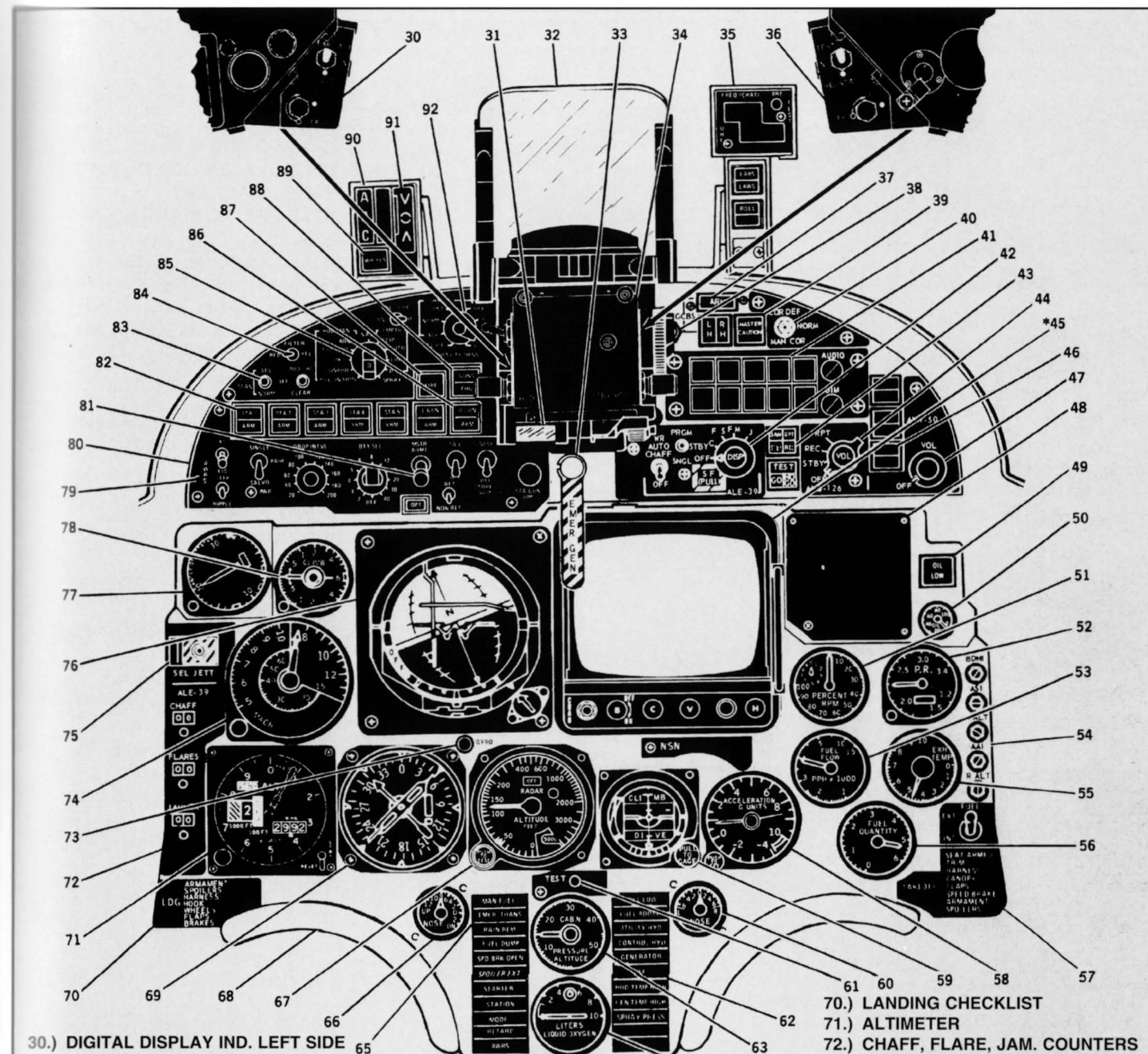
- 29.) GUNSIGHT CONTROL PANEL
- 30.) ACCELEROMETER
- 31.) ALL-ATTITUDE INDICATOR
- 32.) VIDEO MONITOR (IP-936A/AXQ)
- 33.) LABS TIMER
- 34.) ENGINE PRESSURE RATIO INDICATOR
- 35.) OIL LOW WARNING LIGHT/SWITCH
- 36.) TACHOMETER
- 37.) OIL PRESSURE INDICATOR
- 38.) FUEL FLOW INDICATOR
- 39.) EXHAUST GAS TEMPERATURE INDICATOR
- 40.) FUEL QUANTITY INDICATOR
- 41.) RADAR ALTIMETER
- 42.) TAKEOFF CHECKLIST
- 43.) AZIMUTH INDICATOR (APR-25)
- 44.) EMER. MANUAL FLIGHT CONT. REL. HANDLE
- 45.) STANDBY ATTITUDE INDICATOR
- 46.) RADAR MODE SELECTOR PANEL
- 46A.) STATIONS SELECT SWITCHES ^^
- 46B.) STATION 3 CENTERLINE SWITCH \*\*
- 47.) LIQUID OXYGEN QUANTITY INDICATOR
- 48.) SHRIKE MODE SELECT SWITCH
- 49.) CABIN PRESSURE ALTITUDE INDICATOR
- 50.) WALLYE TEST NORM, SHRIKE 1 AND 2, AND SHRIKE VOLUME CONTROL SWITCH

- 51.) AIRCRAFT WEAPON REL. SYSTEM PANEL
- 52.) ARMAMENT CONTROL PANEL
- 53.) BDHI NAV COMPUTER, TACAN SWITCH
- 54.) TEST SWITCH
- 55.) PILOT'S WEAPON ADVISORY LIGHTS
- 56.) BEARING, DISTANCE, HEADING INDICATOR (BDHI)
- 57.) VERTICAL VELOCITY INDICATOR
- 58.) EMERGENCY STORES RELEASE HANDLE
- 59.) LANDING CHECKLIST
- 60.) ANGLE-OF-ATTACK INDICATOR
- 61.) ALTIMETER
- 62.) CAUTION PANEL (LADDER LIGHTS)
- 63.) AIRSPEED INDICATOR

^^ AIRCRAFT REWORKED PER AFC 438-1  
 \*\* AIRCRAFT REWORKED PER AFC 527



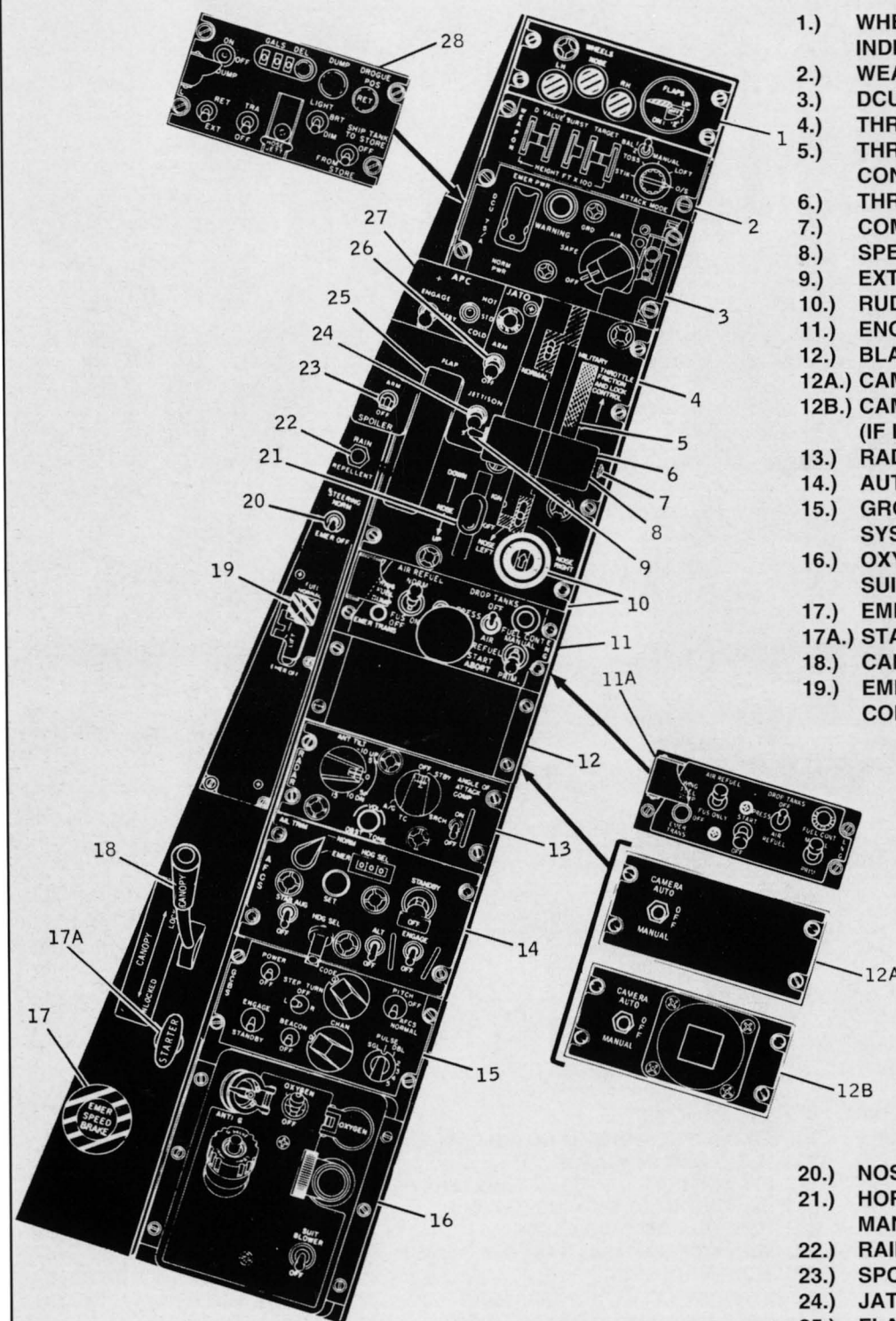
# LATE HUD A-4M INSTRUMENT PANEL BuNo 160241 - 160264 & RETROFITS



- 30.) DIGITAL DISPLAY IND. LEFT SIDE
- 31.) KNEEBOARD FLOOD LIGHT
- 32.) DIGITAL DISPLAY IND COMBINER GLASS
- 33.) EMER. GENERATOR RELEASE HANDLE
- 34.) DIGITAL DISPLAY INDICATOR (DDI)
- 35.) REM. CH. FREQ. IND. & MISC. LTS. DISP.
- 35.) DIGITAL DISPLAY IND. RIGHT SIDE
- 38.) ALQ-126 CIRCUIT BREAKER
- 39.) MASTER CAUTION LIGHT
- 40.) CORRELATION SWITCH
- 41.) TDU PANEL ALR-45
- 42.) ALE-39 SELECT SWITCHES
- 43.) ECM DISPLAY LIGHTS ALQ-126
- 44.) ALQ-126 SELECT SWITCH
- 45.) VIDEO MONITOR IP-936A/AXQ \*
- 46.) ECM LIGHTS ALR-45/ALR-50
- 47.) ALR-50 VOLUME CONTROL
- 48.) COVER PLATE ALR-45 IND. PROVISIONS
- 49.) OIL LOW WARNING LIGHT/SWITCH
- 50.) OIL PRESSURE INDICATOR
- 51.) TACHOMETER
- 52.) ENGINE PRESSURE RATIO INDICATOR
- 53.) FUEL FLOW INDICATOR
- 54.) PRI. FLT. INST. LT. POTENTIOMETERS (5)
- 55.) EXHAUST GAS TEMP. INDICATOR
- 56.) FUEL QUANTITY INDICATOR
- 57.) FUEL QTY. SWITCH & TAKEOFF CK/LIST
- 58.) ACCELEROMETER
- 59.) STANDBY ATTITUDE INDICATOR
- 60.) NOSE TRIM INDICATOR LEFT-RIGHT
- 61.) MASTER TEST SWITCH
- 62.) RT. CAUT./ADVISORY ANNUNC. PANEL
- 63.) CABIN PRESS. ALTITUDE IND.
- 64.) LIQUID OXYGEN QUANTITY IND.
- 65.) LEFT CAUTION/ADVISORY AN. PANEL
- 66.) NOSE TRIM INDICATOR UP-DOWN
- 67.) RADAR ALTIMETER APN-194
- 68.) KNEE PAD (2)
- 69.) BEARING, DISTANCE, HEADING IND.
- 70.) LANDING CHECKLIST
- 71.) ALTIMETER
- 72.) CHAFF, FLARE, JAM. COUNTERS
- 73.) GYRO SWITCH
- 74.) AIRSPEED INDICATOR
- 75.) SELECT JETTISON SWITCH
- 76.) ALL-ATTITUDE INDICATOR
- 77.) ANGLE-OF-ATTACK INDICATOR
- 78.) VERTICAL VELOCITY INDICATOR
- 79.) A/C WEAPON REL. SYSTEM AWRS
- 80.) ARMAMENT PANEL
- 81.) MASTER ARMAMENT SWITCH
- 82.) STATION SELECT SWITCHES (5)
- 83.) ADL SELECT SWITCH
- 84.) ARBS FILTER SELECT SWITCH
- 85.) DELIVERY MODE SELECT SWITCH
- 86.) L.H. & R.H. GUN ARM SWITCHES
- 87.) FIRE WARNING LIGHT
- 88.) GUNS CHARGE SWITCH
- 89.) WHEELS WARNING LIGHT
- 90.) APPROACH PWR. COMP. IND. LT.
- 91.) ANGLE-OF-ATTACK INDEXER
- 92.) SHRIKE & SPRAY TANK SEL. SWT.



# EARLY NON - HUD A-4M LEFT - HAND CONSOLE



- 1.) WHEELS AND FLAPS POSITION INDICATOR PANEL
- 2.) WEAPONS CONTROL PANEL CP-741/A
- 3.) DCU-75A T-SYSTEM CONTROL PANEL
- 4.) THROTTLE QUADRANT
- 5.) THROTTLE FRICTION AND LOCK CONTROL
- 6.) THROTTLE CONTROL LEVER
- 7.) COMMUNICATION RADIO MIKE BUTT.
- 8.) SPEED BRAKE SWITCH
- 9.) EXTERIOR LIGHTS MASTER SWITCH
- 10.) RUDDER TRIM CONTROL
- 11.) ENGINE CONTROL PANEL
- 12.) BLANK PANEL
- 12A.) CAMERA SWITCH (IF INSTALLED)
- 12B.) CAMERA SWITCH/BULLPUP CONTROL (IF INSTALLED)
- 13.) RADAR CONTROL PANEL
- 14.) AUTOPILOT CONTROL PANEL
- 15.) GROUND CONTROLLED BOMBING SYSTEM CONTROL PANEL
- 16.) OXYGEN, ANTI-G, ANTIEXPOSURE SUIT CONTROL PANEL
- 17.) EMER. SPEED BRAKE CONT. KNOB
- 17A.) STARTER HANDLE \*
- 18.) CANOPY CONTROL HANDLE
- 19.) EMERGENCY FUEL MANUAL SHUTOFF CONTROL LEVER

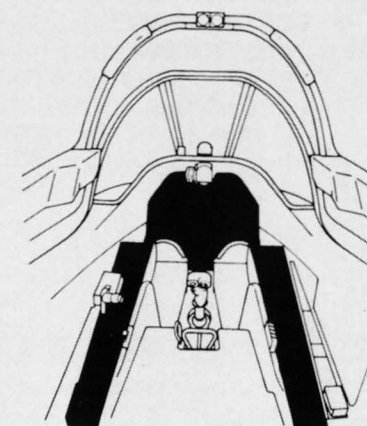
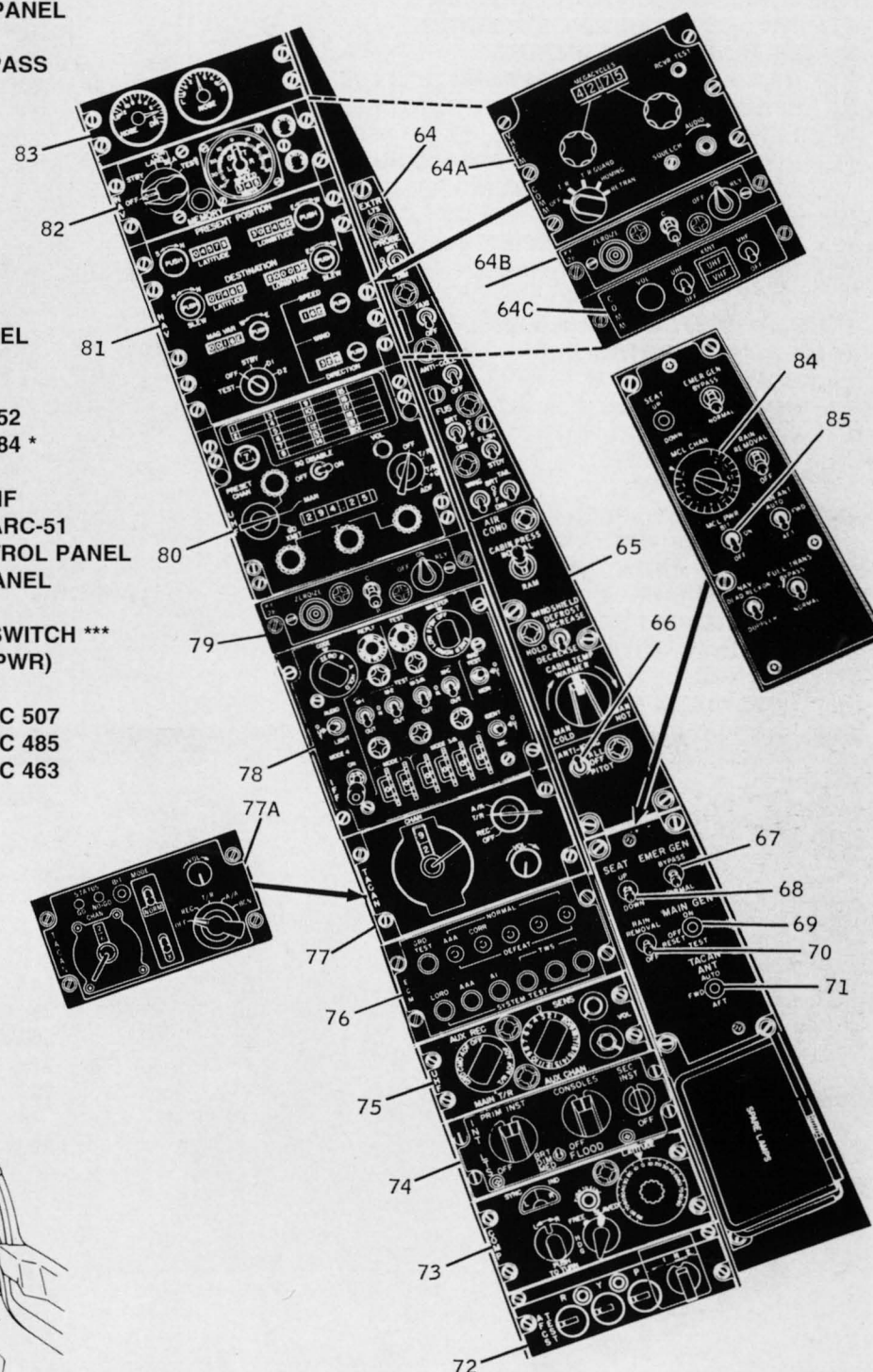
- 20.) NOSE WHEEL STEERING SWITCH
- 21.) HORIZONTAL STABILIZER TRIM MANUAL OVERRIDE CONTROL LEVER
- 22.) RAIN REPELLENT SWITCH
- 23.) SPOILER ARM SWITCH
- 24.) JATO JETTISON SWITCH
- 25.) FLAP HANDLE
- 26.) JATO ARM SWITCH
- 27.) APPROACH POWER COMPENSATOR CONTROL PANEL
- 28.) INFIGHT REFUELING CONTROL PANEL (ALTERNATE PANEL)

\* AIRCRAFT REWORKED PER AFC 486

# EARLY NON - HUD A-4M LEFT - HAND CONSOLE

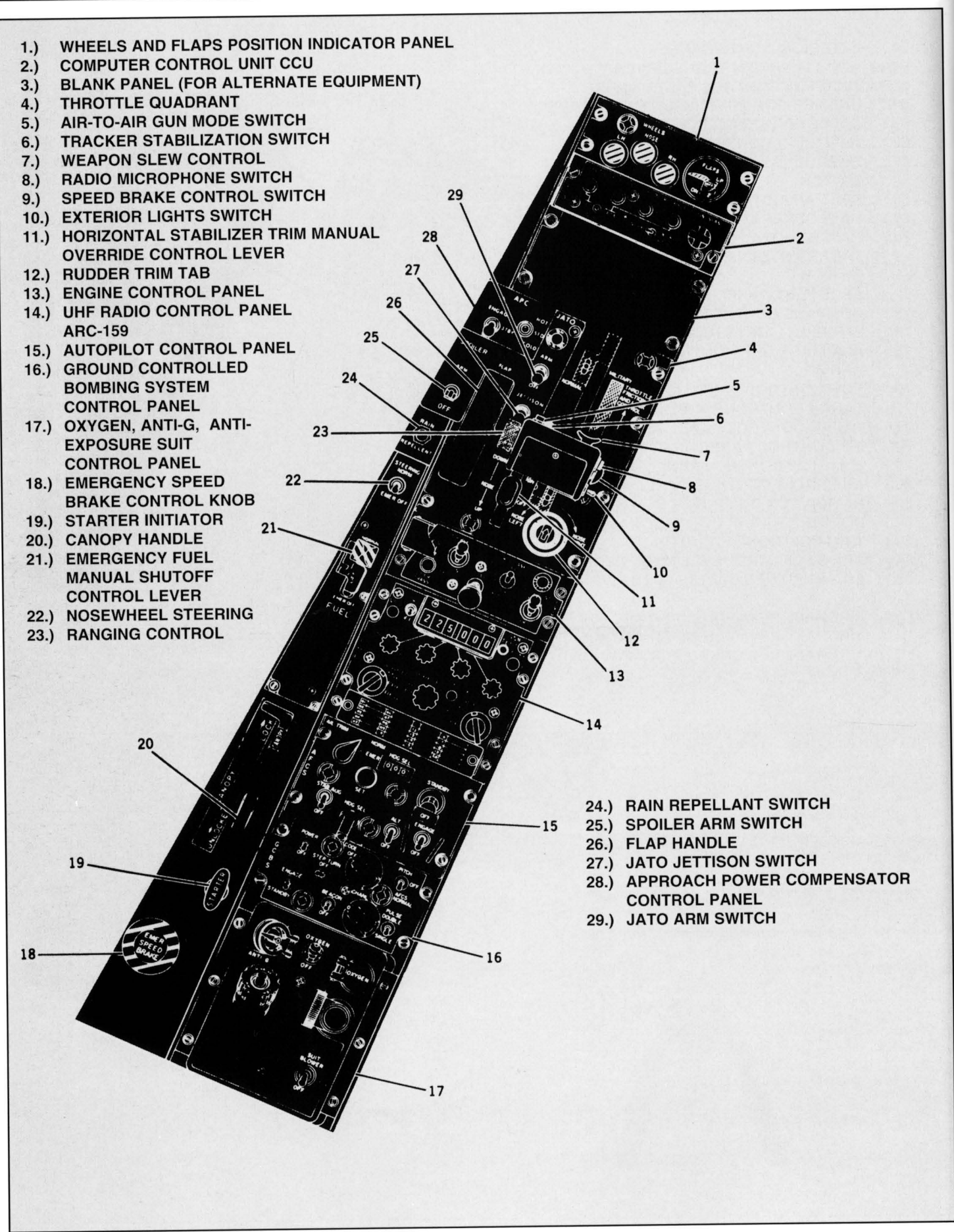
- 64.) EXTERIOR LIGHTS PANEL
- 64A.) ARC-114 VHF/FM TRANSCEIVER \*\*
- 64B.) JULIET 28 CONTROL PANEL VHF \*\*
- 64C.) UHF/VHF COMMUNICATION CONT. PANEL \*\*
- 65.) AIR CONDITIONING CONTROL PANEL
- 66.) ANTI-ICING CONTROL SWITCH
- 67.) EMERGENCY GENERATOR BYPASS SWITCH
- 68.) SEAT ADJUSTMENT SWITCH
- 69.) MAIN GENERATOR SWITCH
- 70.) RAIN REMOVAL SWITCH
- 71.) TACAN ANTENNA CONTROL SWITCH
- 72.) AFCS TEST PANEL
- 73.) COMPASS CONTROL PANEL
- 74.) INTERIOR LIGHTS PANEL
- 75.) AUXILIARY UHF CONTROL PANEL ARR-40
- 76.) ECM CONTROL PANEL APR-25
- 77.) TACAN CONTROL PANEL ARN-52
- 77A.) TACAN CONTROL PANEL ARN-84 \*
- 78.) IFF CONTROL PANEL APX-72
- 79.) JULIET 28 CONTROL PANEL UHF
- 80.) UHF RADIO CONTROL PANEL ARC-51
- 81.) NAVIGATION COMPUTER CONTROL PANEL
- 82.) DOPPLER RADAR CONTROL PANEL
- 83.) TRIM POSITION INDICATOR
- 84.) ARA-63 CHANNEL SELECTOR SWITCH \*\*\*
- 85.) ARA-63 POWER SWITCH (MCL PWR)

\* AIRCRAFT REWORKED PER AFC 507  
 \*\* AIRCRAFT REWORKED PER AFC 485  
 \*\*\* AIRCRAFT REWORKED PER AFC 463

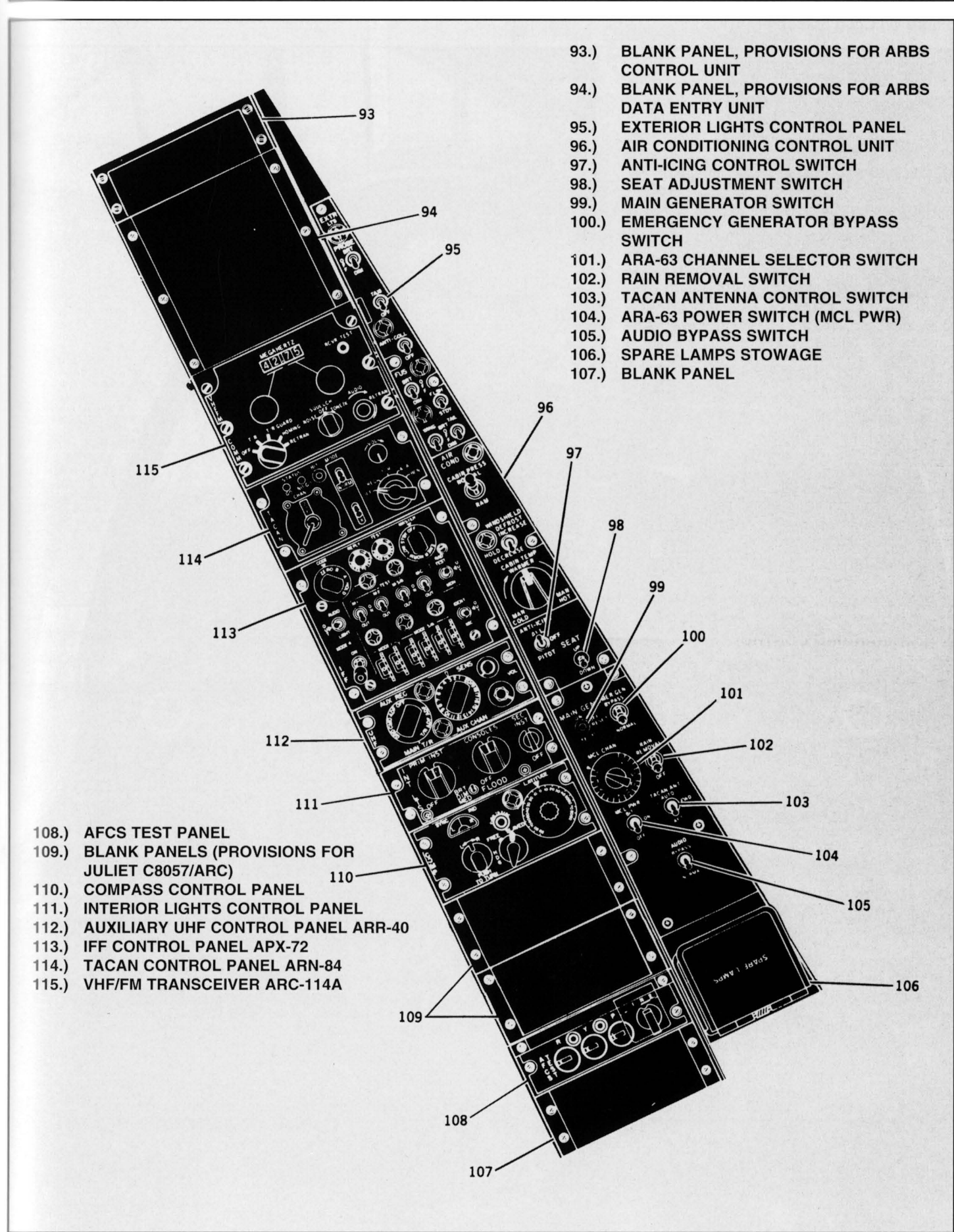




# LATE HUD A-4M LEFT - HAND CONSOLE BuNo 160241-160264 & RETROFITS



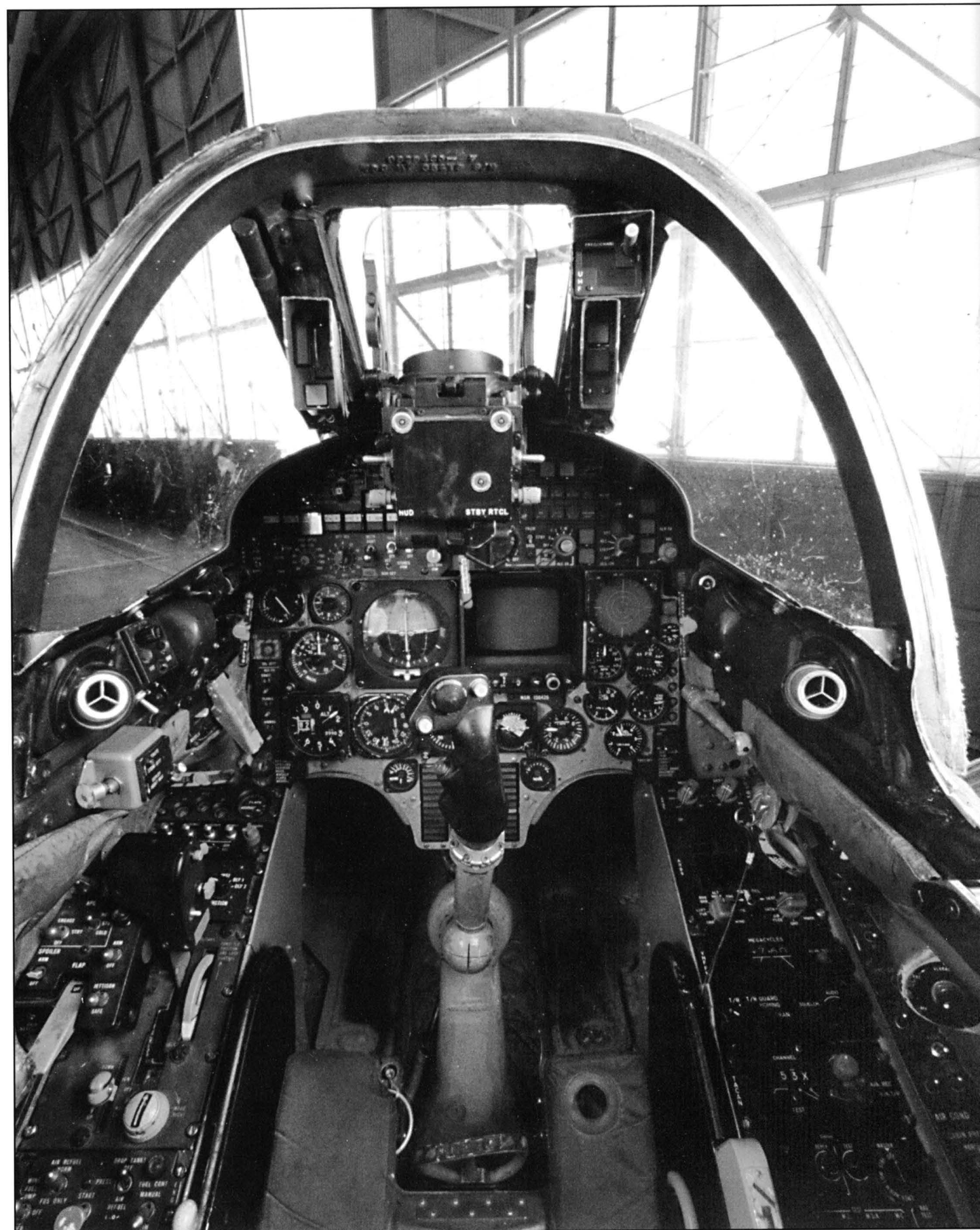
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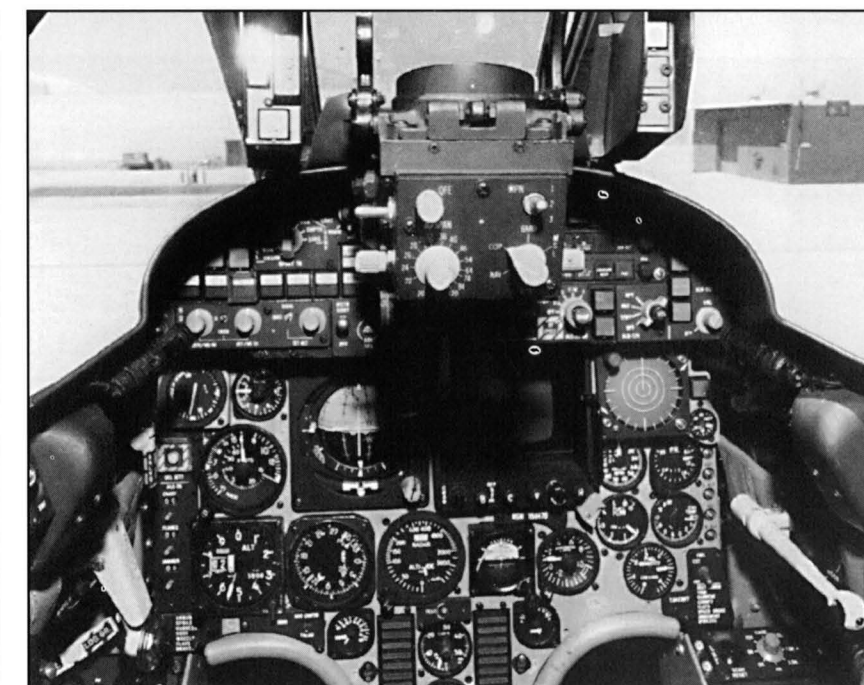
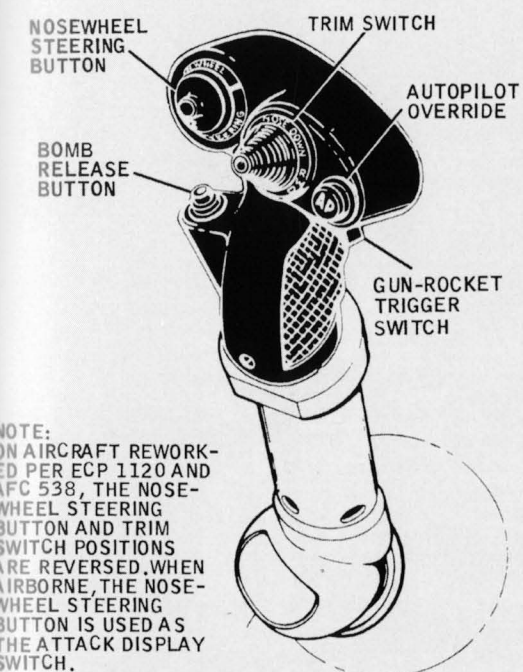
# LATE HUD A-4M COCKPIT LAYOUT BuNo 160241 - 160264 & RETROFITS

Photo via Craig Kaston.



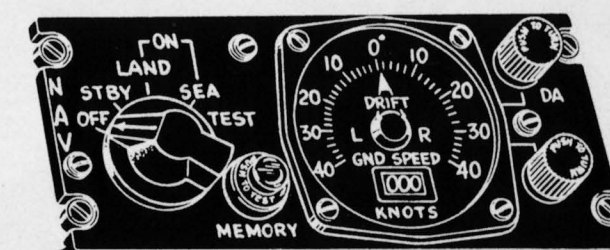
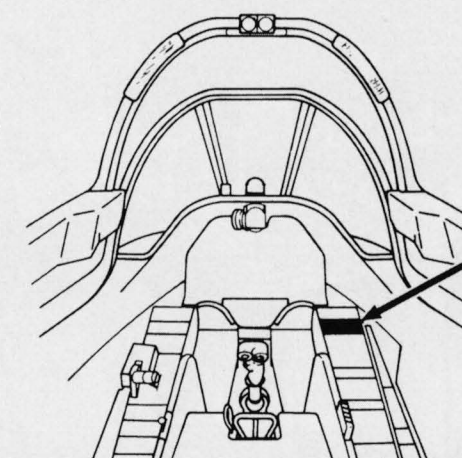
# LATE HUD A-4M INSTRUMENT PANEL BuNo 160241 - 160264 & RETROFITS

## CONTROL STICK SWITCHES

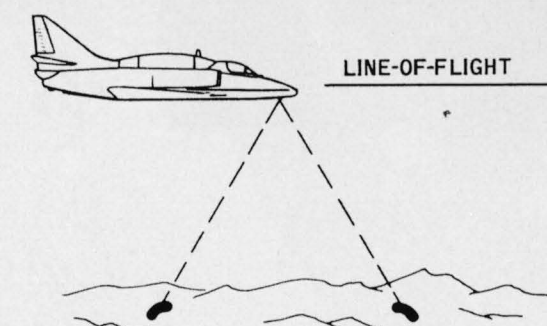


Above, another late A-4M cockpit with switches added to the HUD face plate. (Harry Gann)

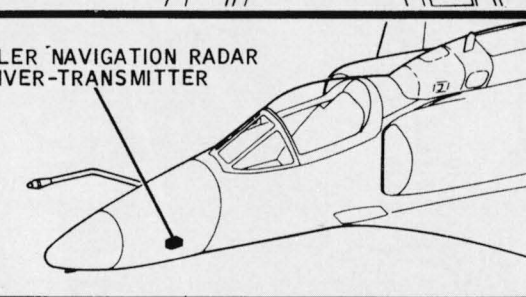
## APN-153 NAVIGATION SET (DOPPLER)



CONTROL INDICATOR C-4418



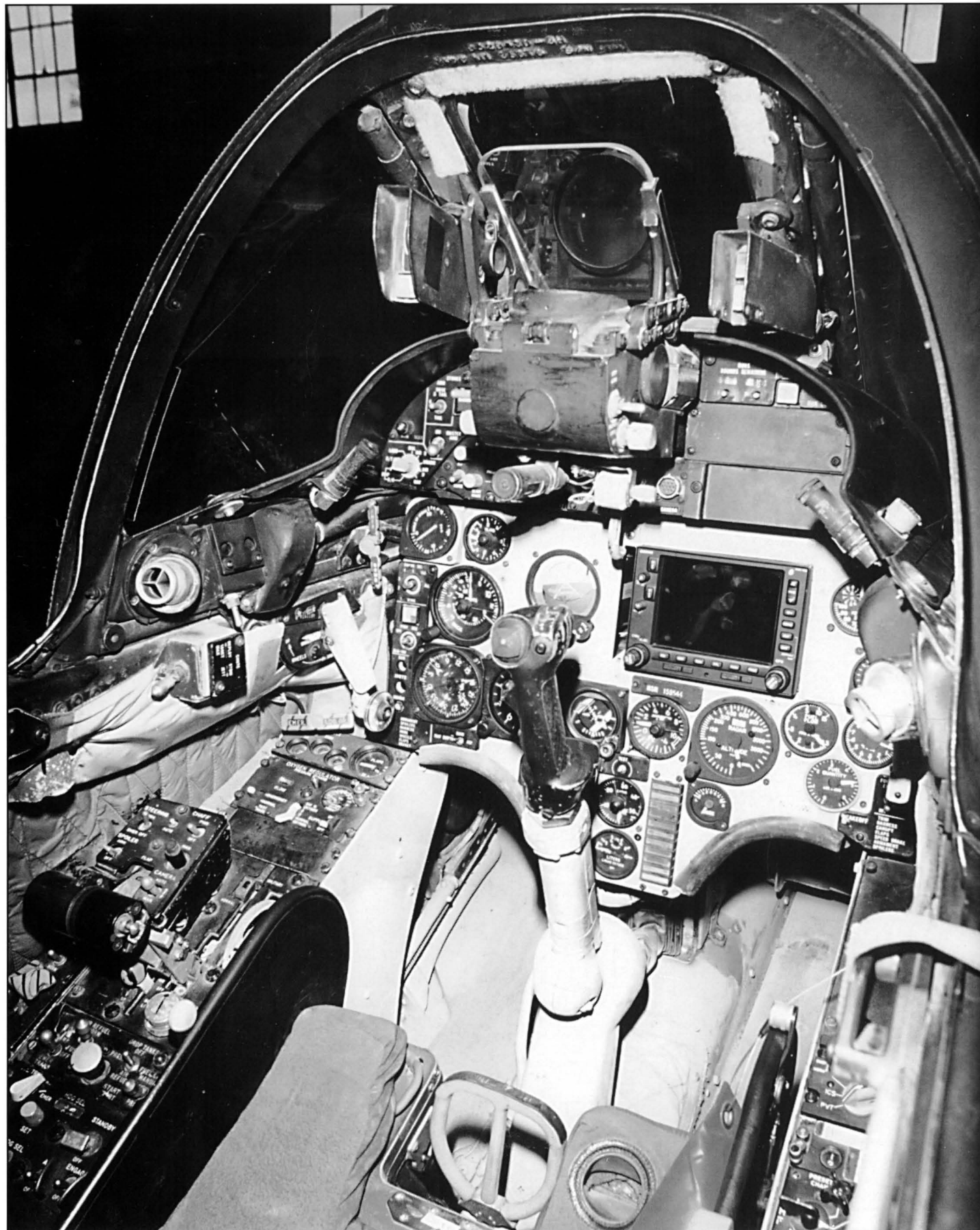
DOPPLER NAVIGATION RADAR RECEIVER-TRANSMITTER





# ISRAELI A-4N INSTRUMENT PANEL

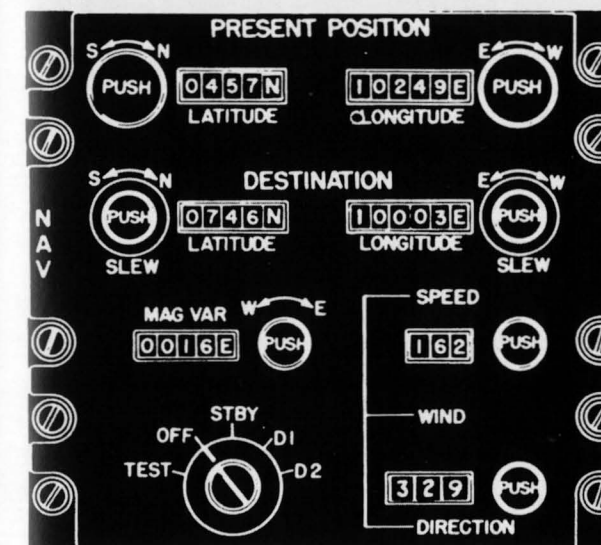
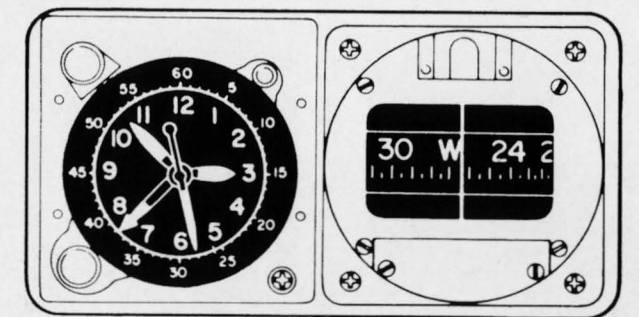
Advanced Training Systems International ATSI A-4N forward cockpit in July 2002. (Douglas Slowiak)



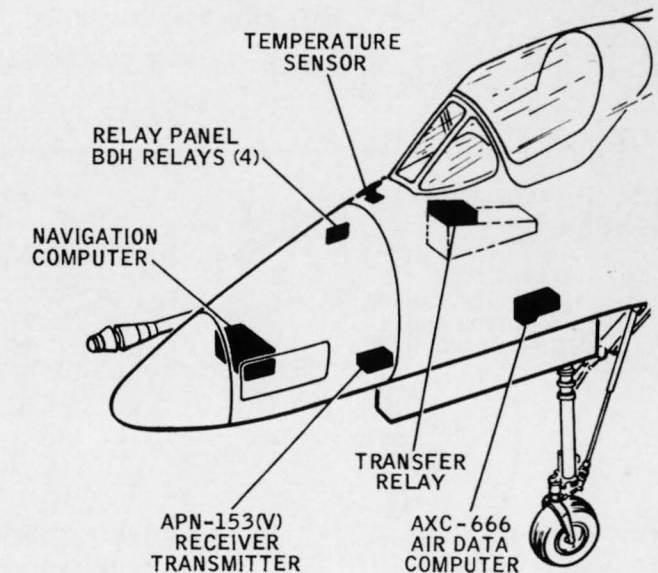
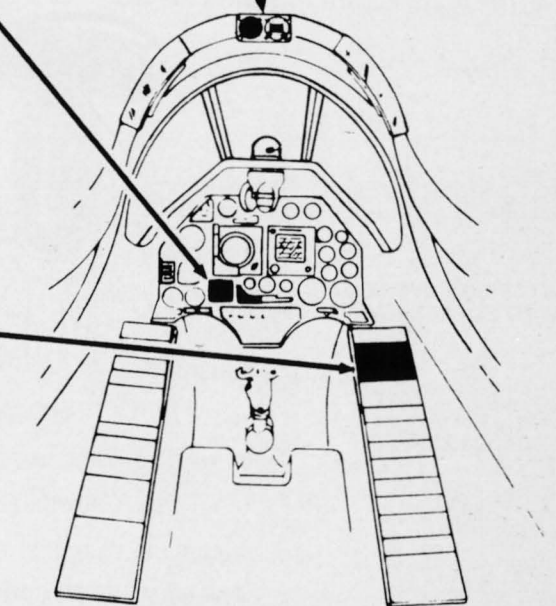
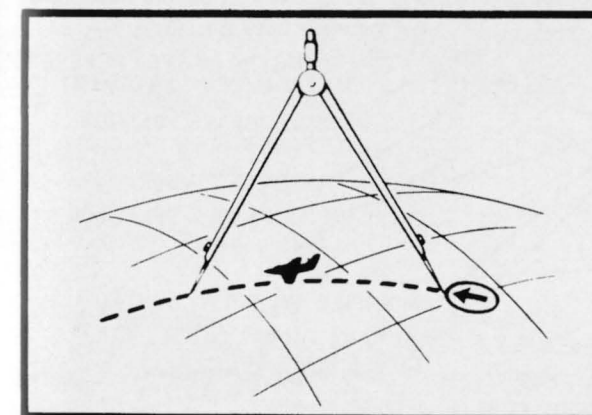
# ASN-41 NAVIGATION COMPUTER SYSTEM



BEARING, DISTANCE, AND HEADING INDICATOR

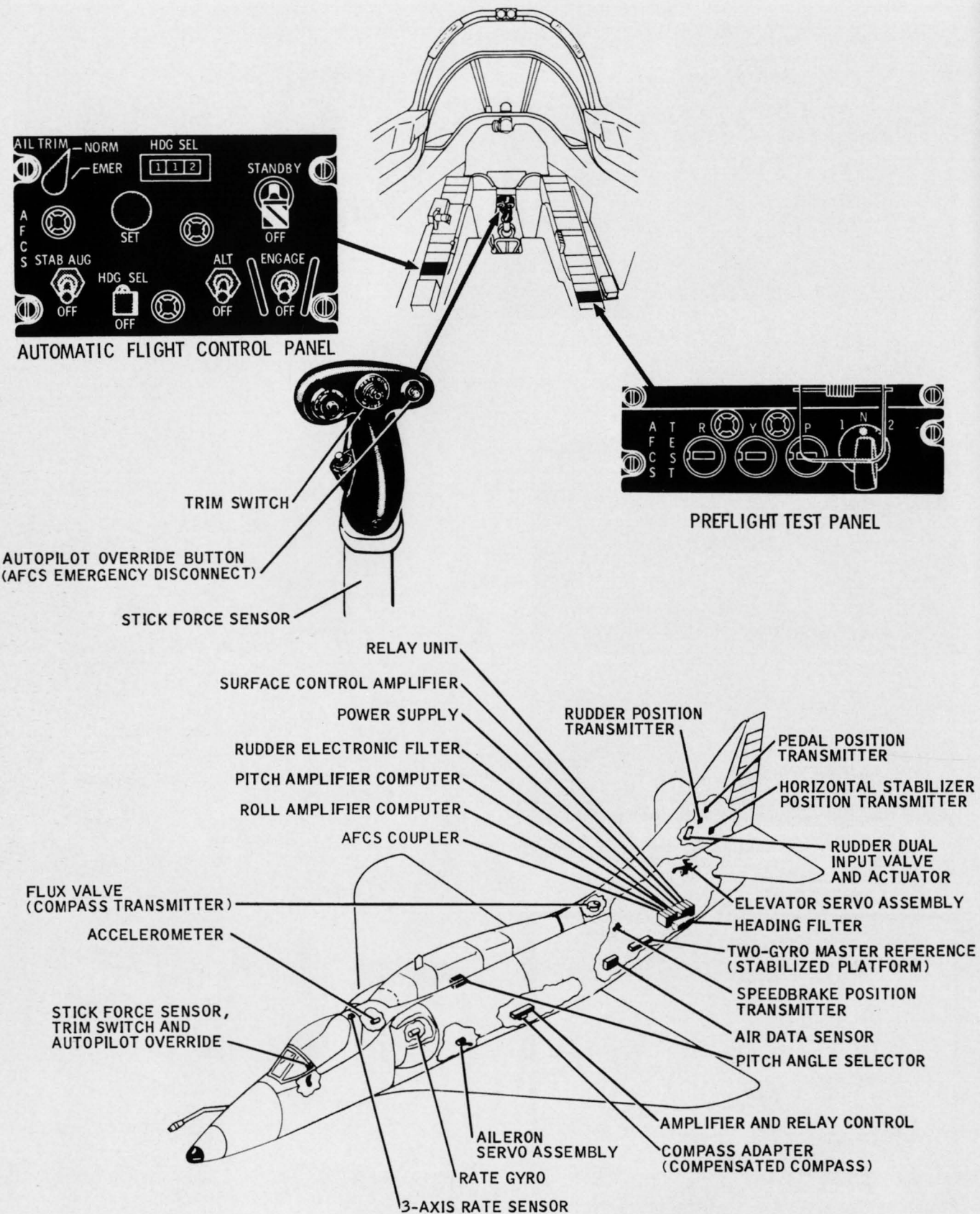


NAVIGATION CONTROL INDICATOR PANEL

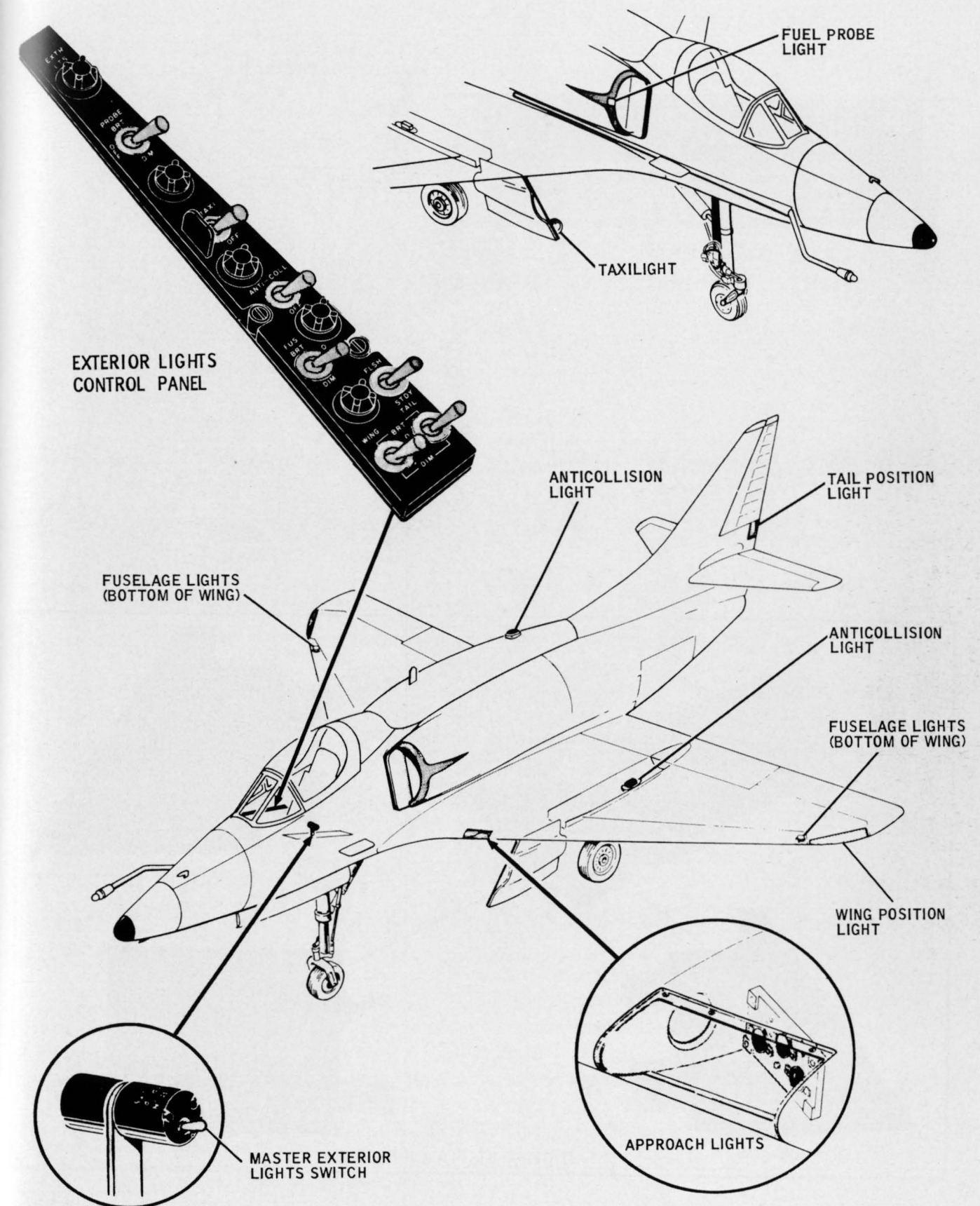




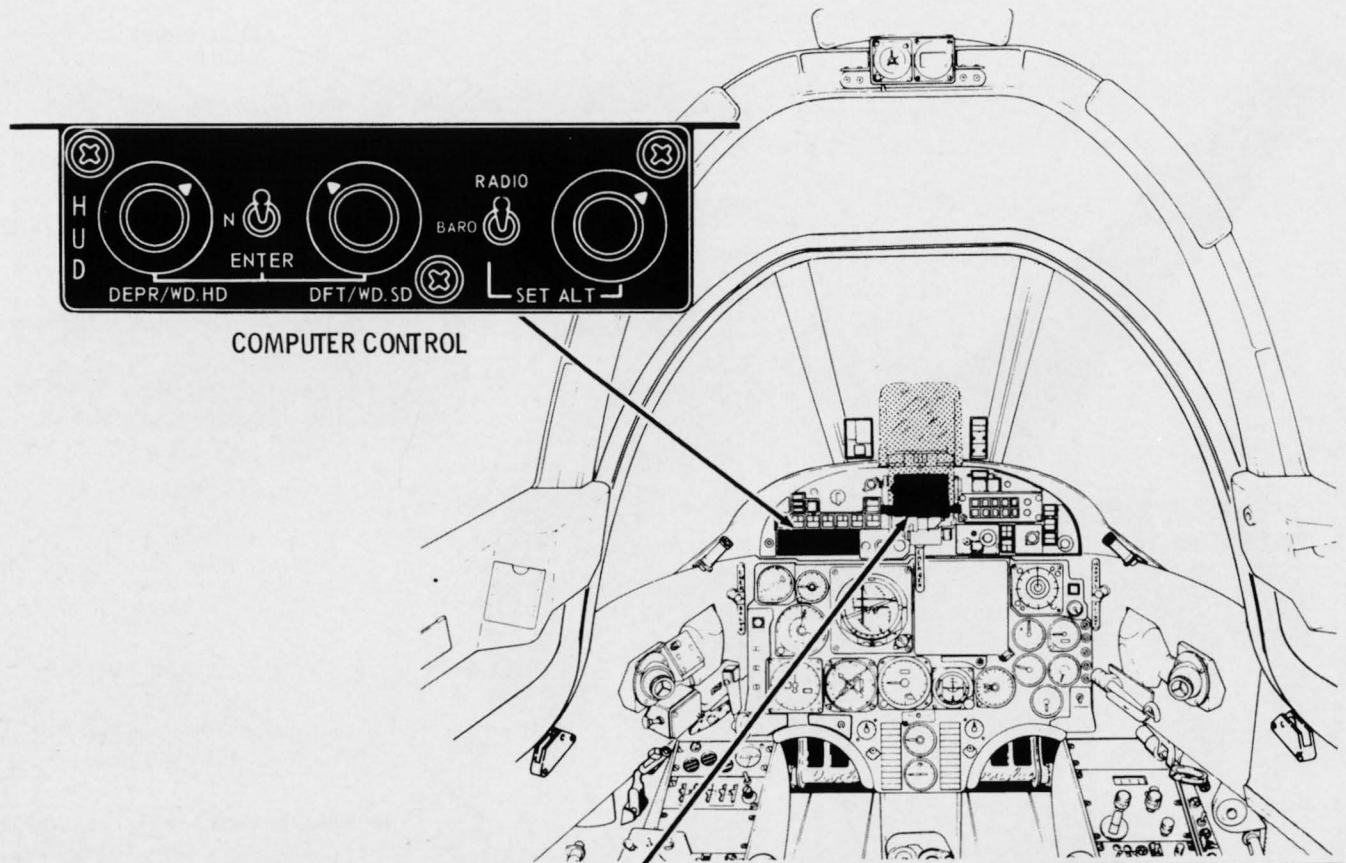
## AUTOMATIC FLIGHT CONTROL SYSTEM



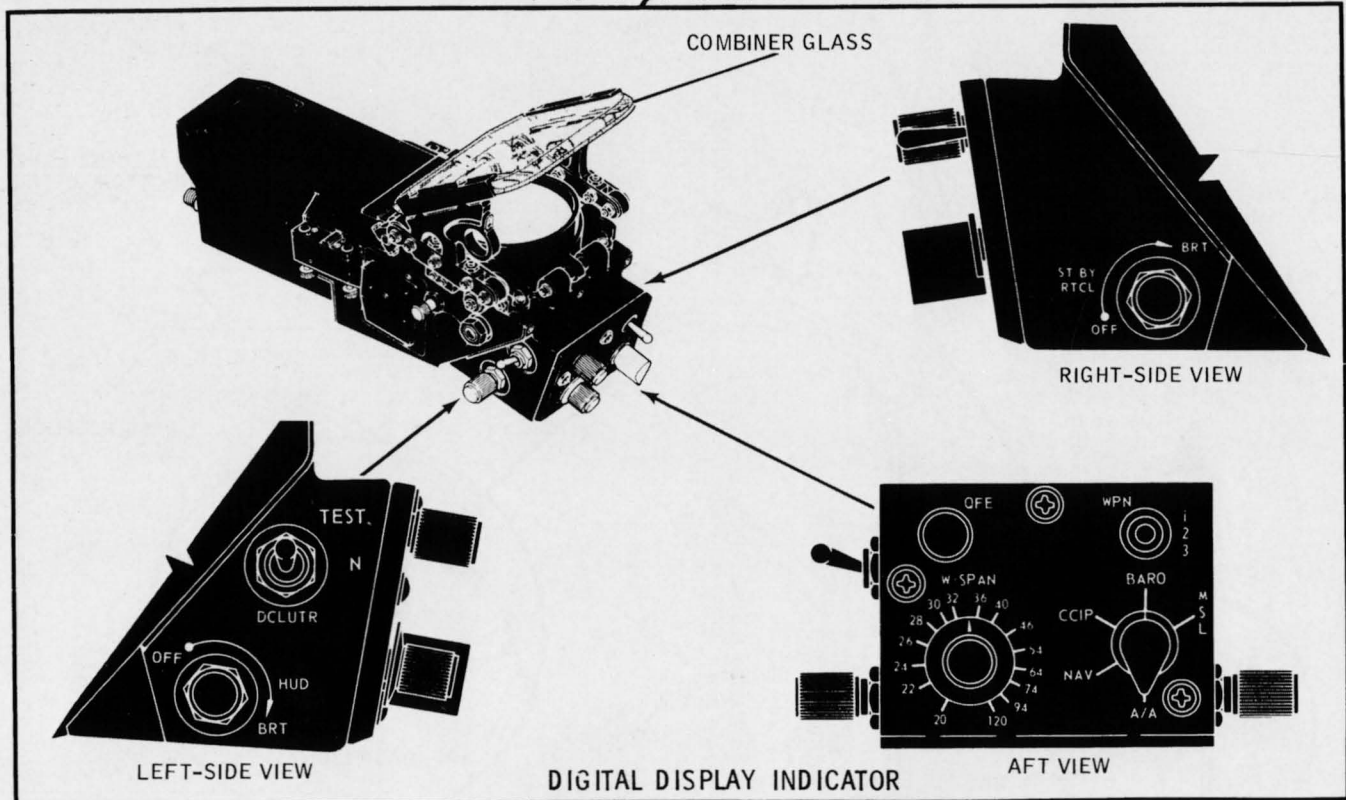
## EXTERIOR LIGHTS







COMPUTER CONTROL



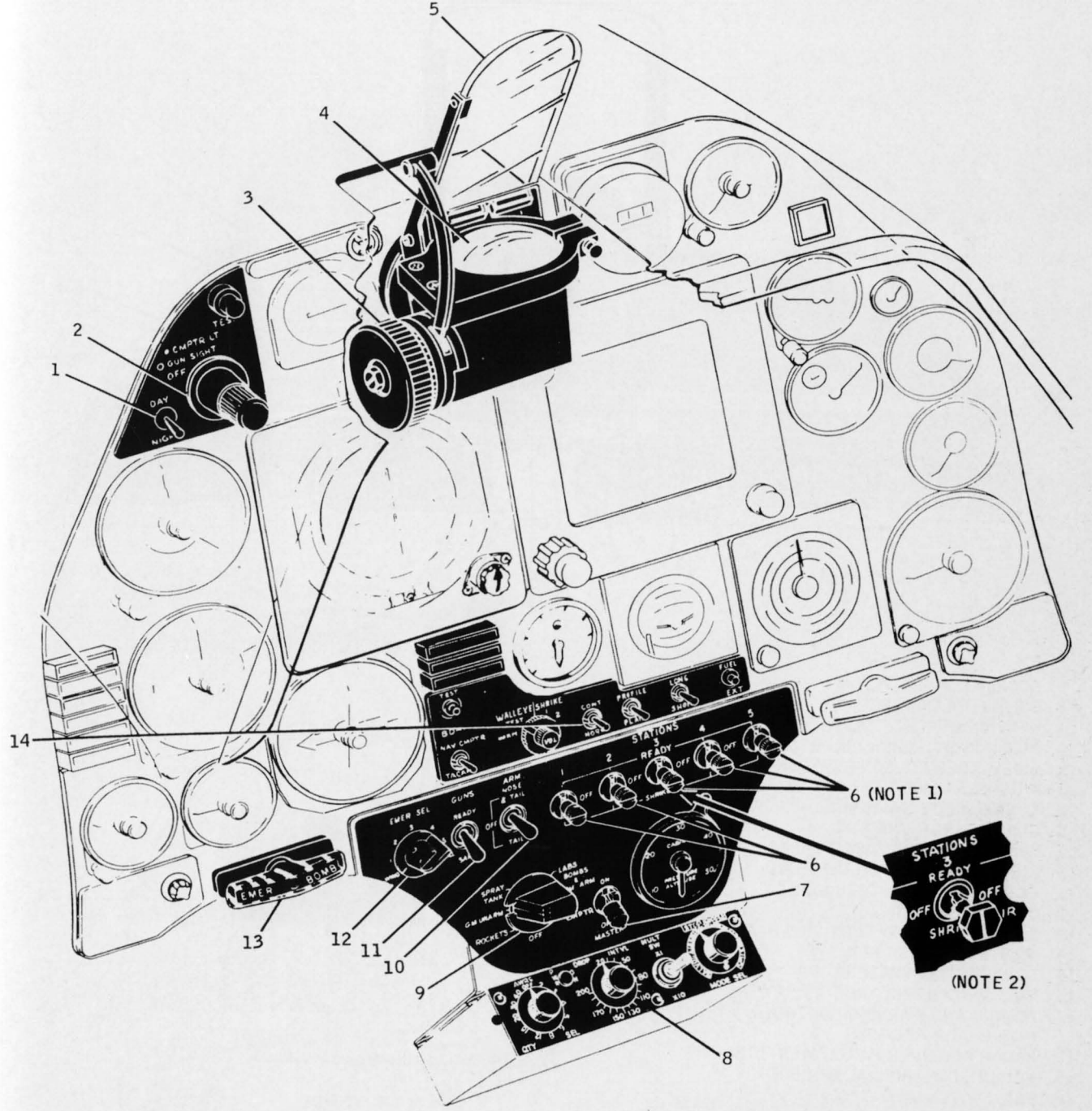
COMBINER GLASS

RIGHT-SIDE VIEW

LEFT-SIDE VIEW

DIGITAL DISPLAY INDICATOR

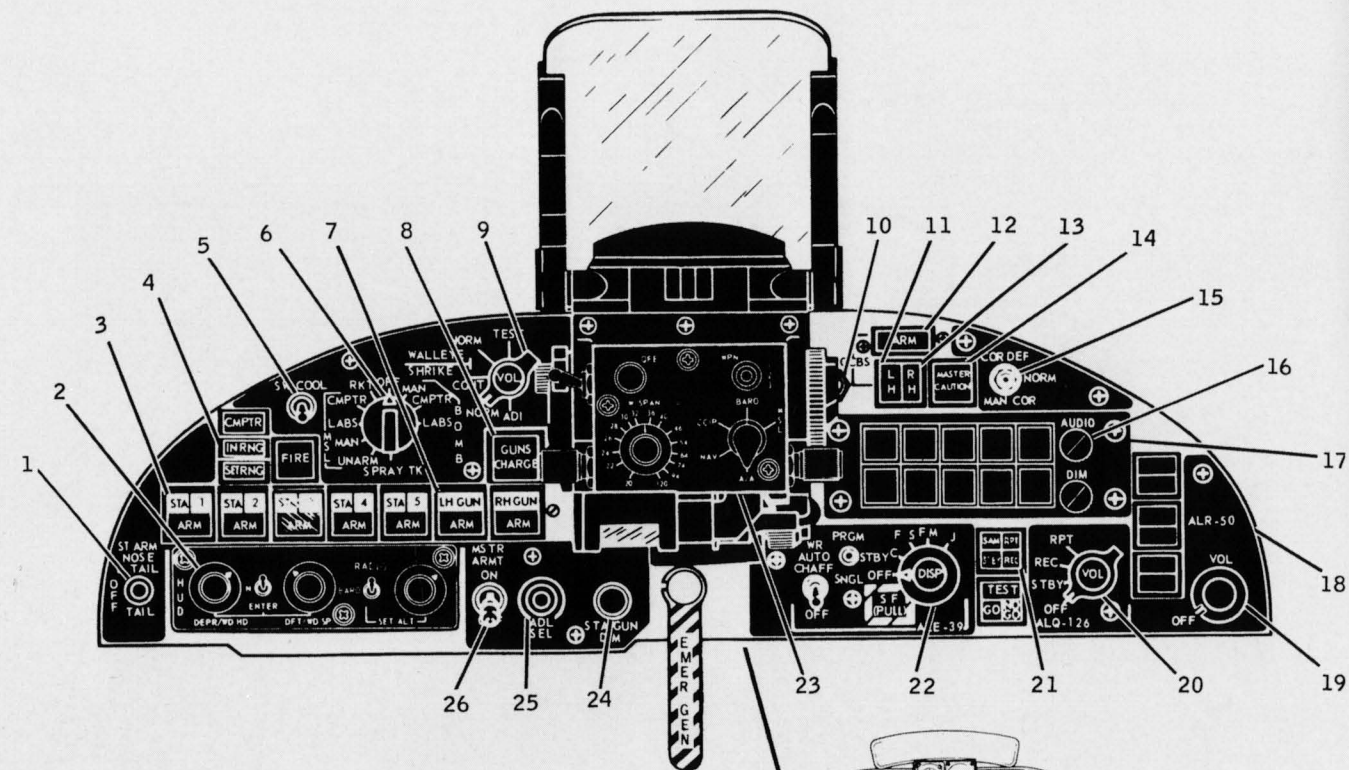
AFT VIEW



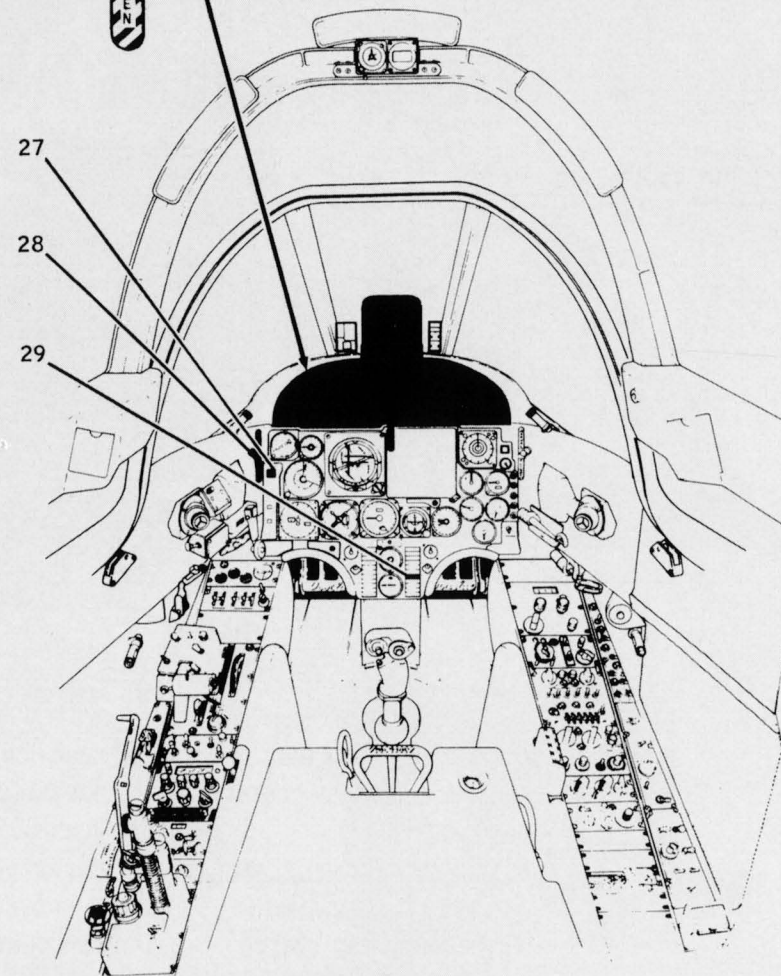
- |                               |                                                  |
|-------------------------------|--------------------------------------------------|
| 1. GUNSIGHT DAY NIGHT SWITCH  | 8. AIRCRAFT WEAPONS RELEASE SYSTEM CONTROL PANEL |
| 2. GUNSIGHT LIGHT CONTROL     | 9. FUNCTION SELECTOR SWITCH                      |
| 3. GUNSIGHT ELEVATION CONTROL | 10. BOMB ARMING SWITCH                           |
| 4. GUNSIGHT                   | 11. GUNS SWITCH                                  |
| 5. GUNSIGHT REFLECTOR PLATE   | 12. EMERGENCY SELECTOR SWITCH                    |
| 6. STATIONS SELECT SWITCHES   | 13. EMERGENCY STORES RELEASE HANDLE              |
| 7. MASTER ARMAMENT SWITCH     | 14. SIDS CONT-NORM MODE SWITCH                   |

Effectivity Notes: (1) All aircraft reworked per A-4 AFC 438-1;  
(2) All aircraft reworked per A-4 AFC 527.

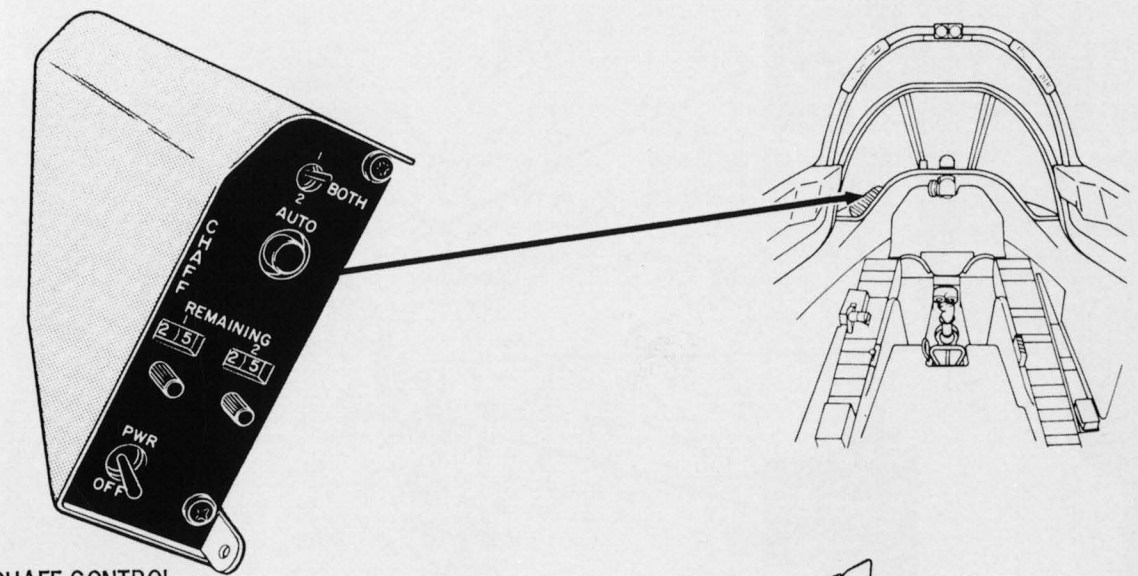




1. STORES ARM SWITCH
2. COMPUTER CONTROL
3. STATIONS SELECT SWITCHES
4. PILOT'S ADVISORY LIGHTS (CP-741/A)
5. SIDEWINDER COOLANT SWITCH
6. ARMAMENT MODE SELECT SWITCH
7. GUNS SELECT SWITCHES
8. GUNS CHARGE SWITCH
9. WALLEYE/SHRIKE MODE SELECT SWITCH
10. CIRCUIT BREAKER (ALQ-126(V))
11. GCBS LEFT-HAND TURN LIGHT
12. GCBS ARM LIGHT
13. GCBS RIGHT-HAND TURN LIGHT
14. MASTER CAUTION LIGHT
15. CORRELATION SWITCH
16. VOLUME CONTROL (ALR-45C(V))
17. HOMING AND WARNING CONTROL PANEL (ALR-45C(V))
18. RADAR RECEIVER PANEL (ALR-50B(V))
19. VOLUME CONTROL (ALR-50B(V))
20. ECM SWITCH (ALQ-126(V))
21. ECM WARNING LIGHTS (ALQ-126(V))
22. SELECT SWITCHES (ALE-39)
23. DIGITAL DISPLAY INDICATOR
24. STATION/GUN DIMMING CONTROL
25. ADL SELECT SWITCH
26. MASTER ARMAMENT SWITCH
27. COUNTER AND SELECT JETTISON SWITCH
28. EMERGENCY SALVO HANDLE
29. HUD TEMP HIGH



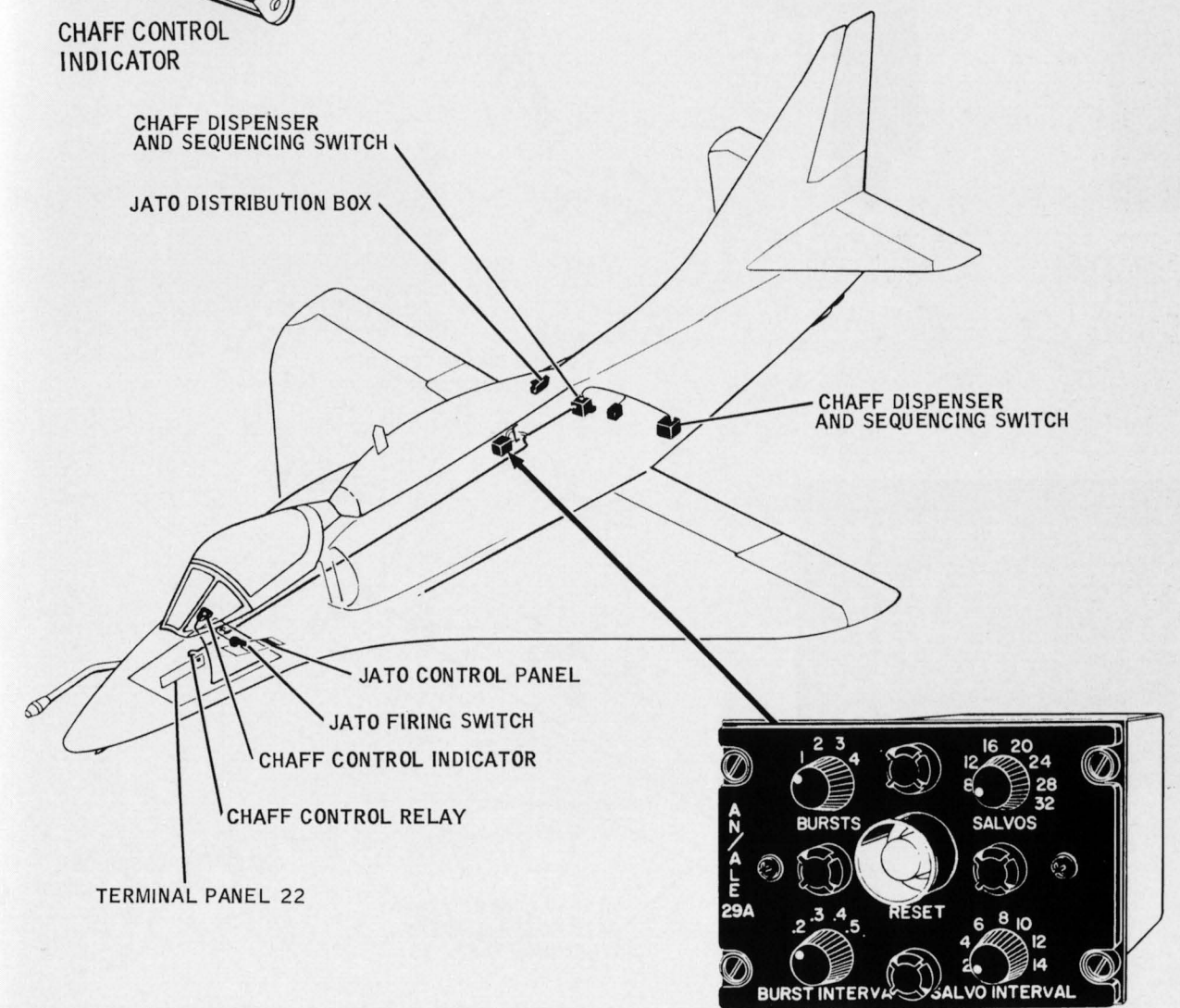
Effectivity: Aircraft reworked per ECP's 1120, 1147, and AFC 538.



CHAFF CONTROL INDICATOR

CHAFF DISPENSER AND SEQUENCING SWITCH

JATO DISTRIBUTION BOX



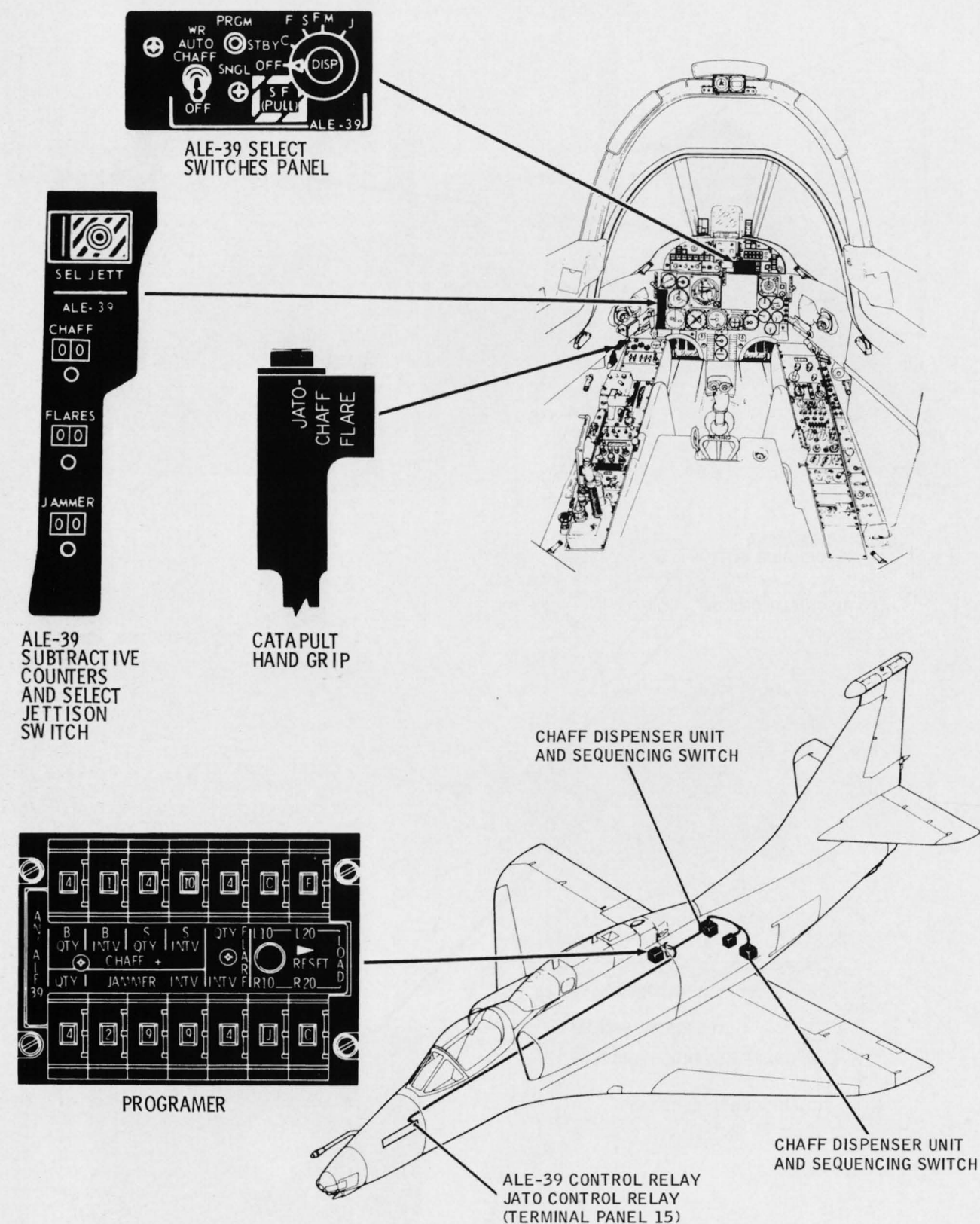
TERMINAL PANEL 22



PROGRAMMER

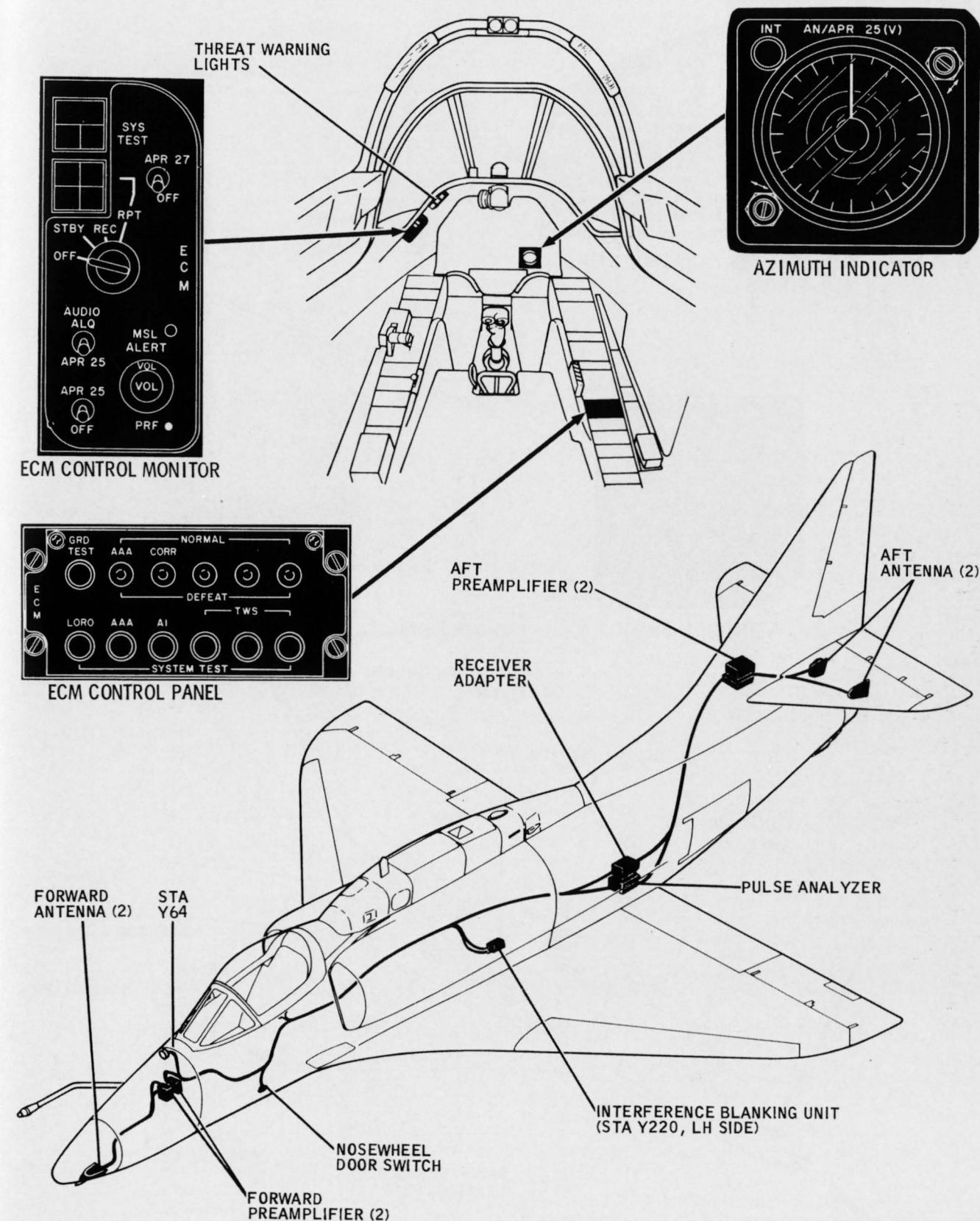


# LATE A-4M ALE-39 COUNTERMEASURES CHAFF DISPENSING SYSTEM



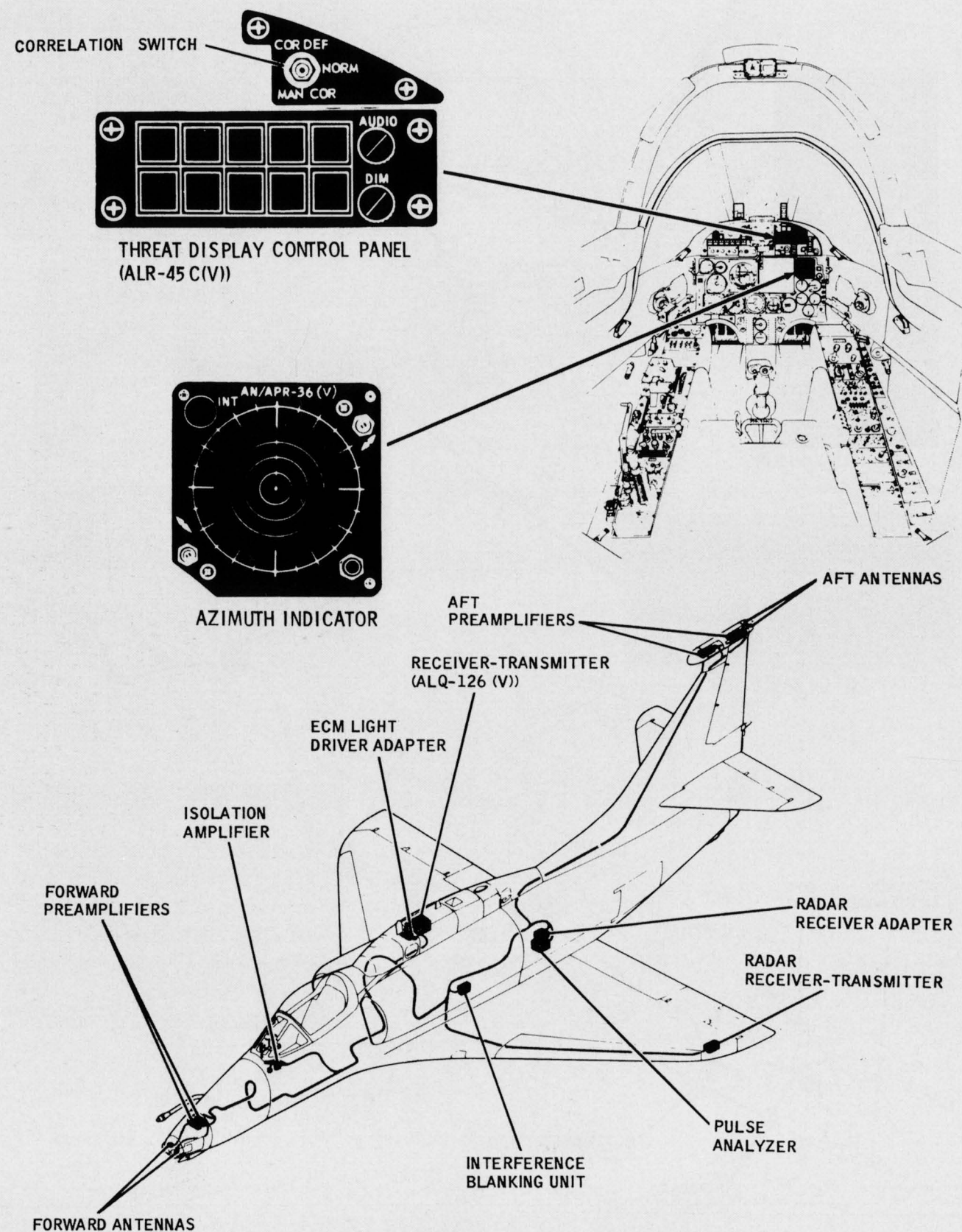
Effectivity: Aircraft reworked per ECP 1120 and AFC 538.

# EARLY A-4M APR-25 HOMING AND WARNING SYSTEM



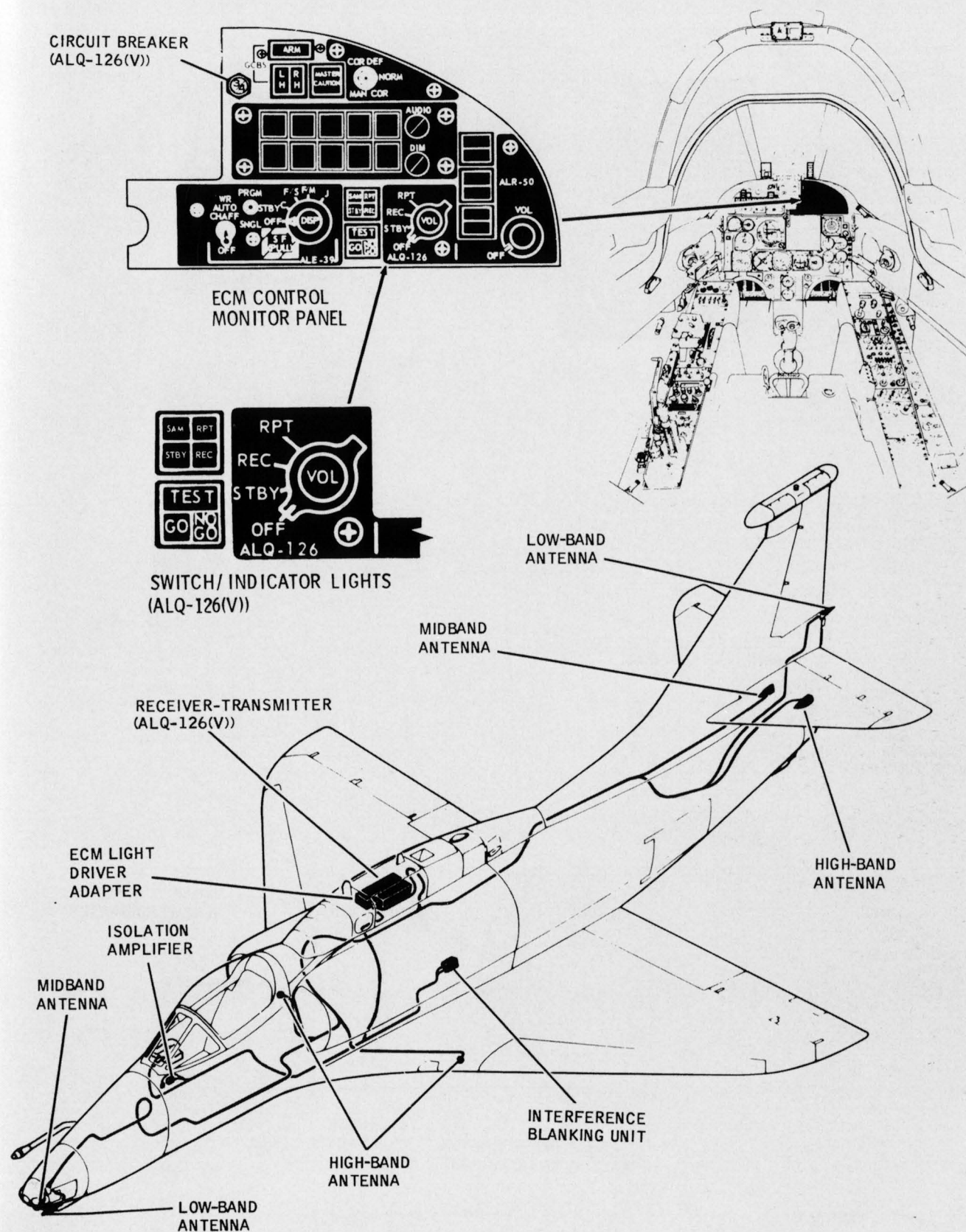


# ALR-45 HOMING AND WARNING SYSTEM



Effectivity: Aircraft reworked per ECP 1120 and AFC 538.

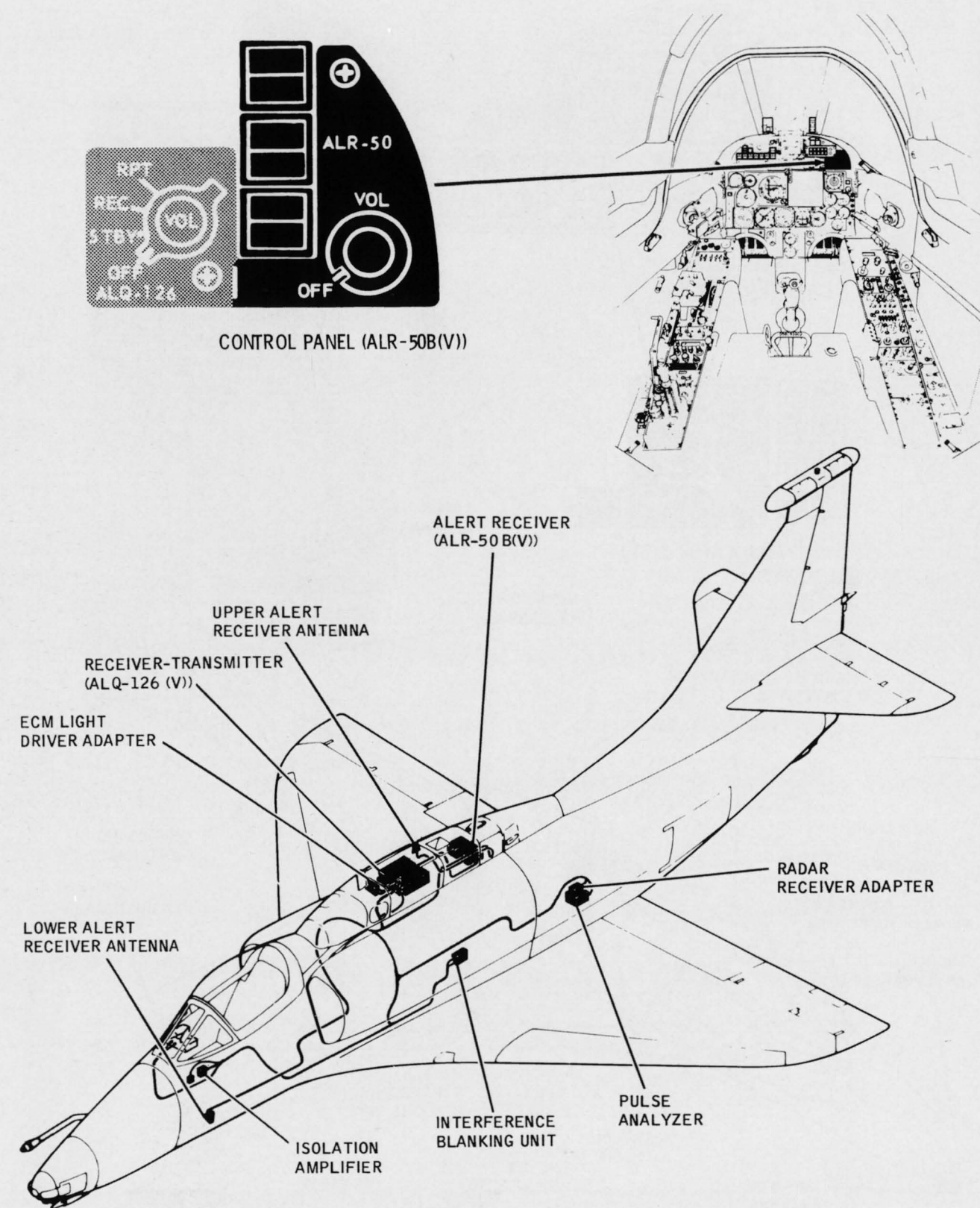
# ALQ-126 COUNTERMEASURES SYSTEM



Effectivity: Aircraft reworked per ECP 1120 and AFC 538.

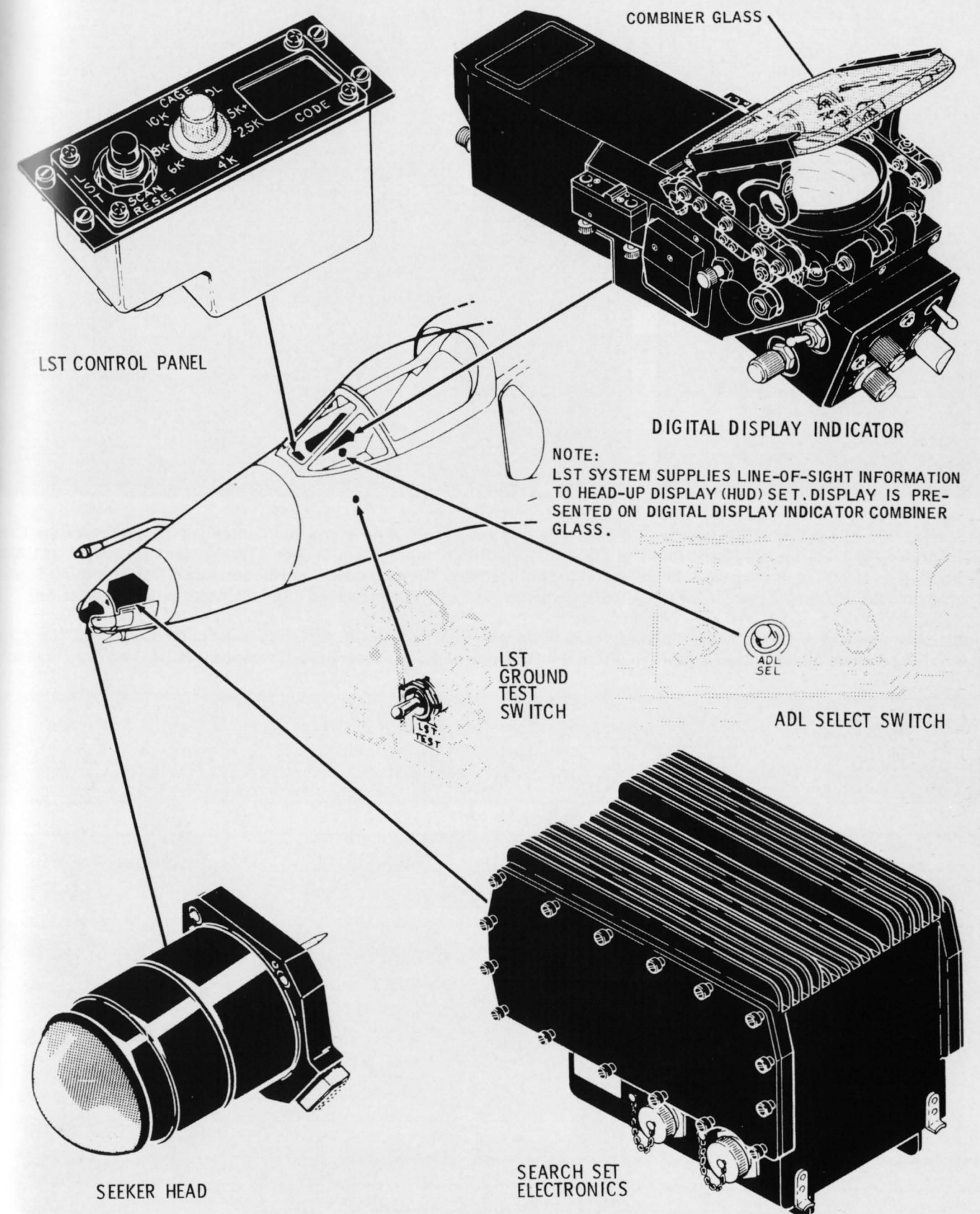


# ALR-50B RADAR RECEIVER SYSTEM



Effectivity: Aircraft reworked per ECP 1120 and AFC 538.

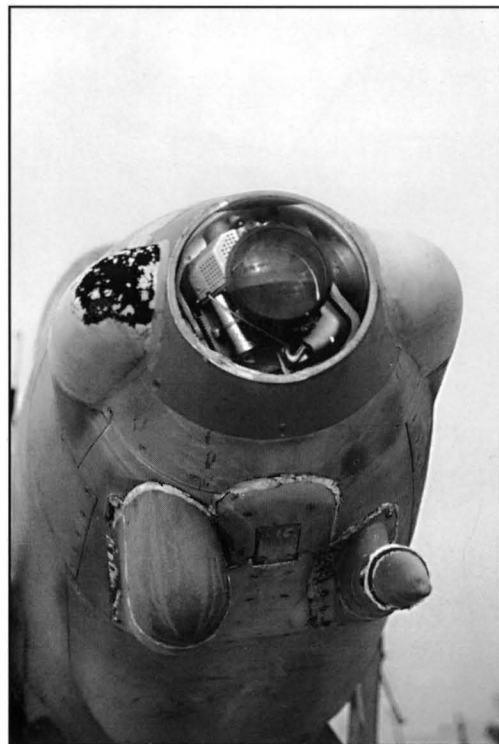
# ANGLE RATE BOMBING SYSTEM (ARBS) COMPONENTS



Effectivity: Aircraft reworked per ECP's 1120 and 1147.



## ANGLE RATE BOMBING SYSTEM (ARBS)



Above, head-on view of the ARBS Seeker / Tracker lens and the assorted nose mounted antennas. (Niedermeier via Craig Kaston) Above right, Marine mechanic looks at the Angle Rate Bombing System Seeker / Tracker lens on a VMA-311 A-4M while holding on to one of the two ALR-45 antennas. (USMC via Harry Gann) Below, The Hughes Angle Rate Bombing System was tested at VX-5 at China Lake, CA by the A-4M seen below. The aircraft was called "Smart Hawk". (via Craig Kaston)

At right, three views of A-4M 160245 in February 1979 fitted with four AGM-65C/E Maverick laser guided missiles. The Angle Rate Bombing System allowed the Skyhawk to utilize the Maverick and other laser guided weapons. (MDAC via Wayne Morris)



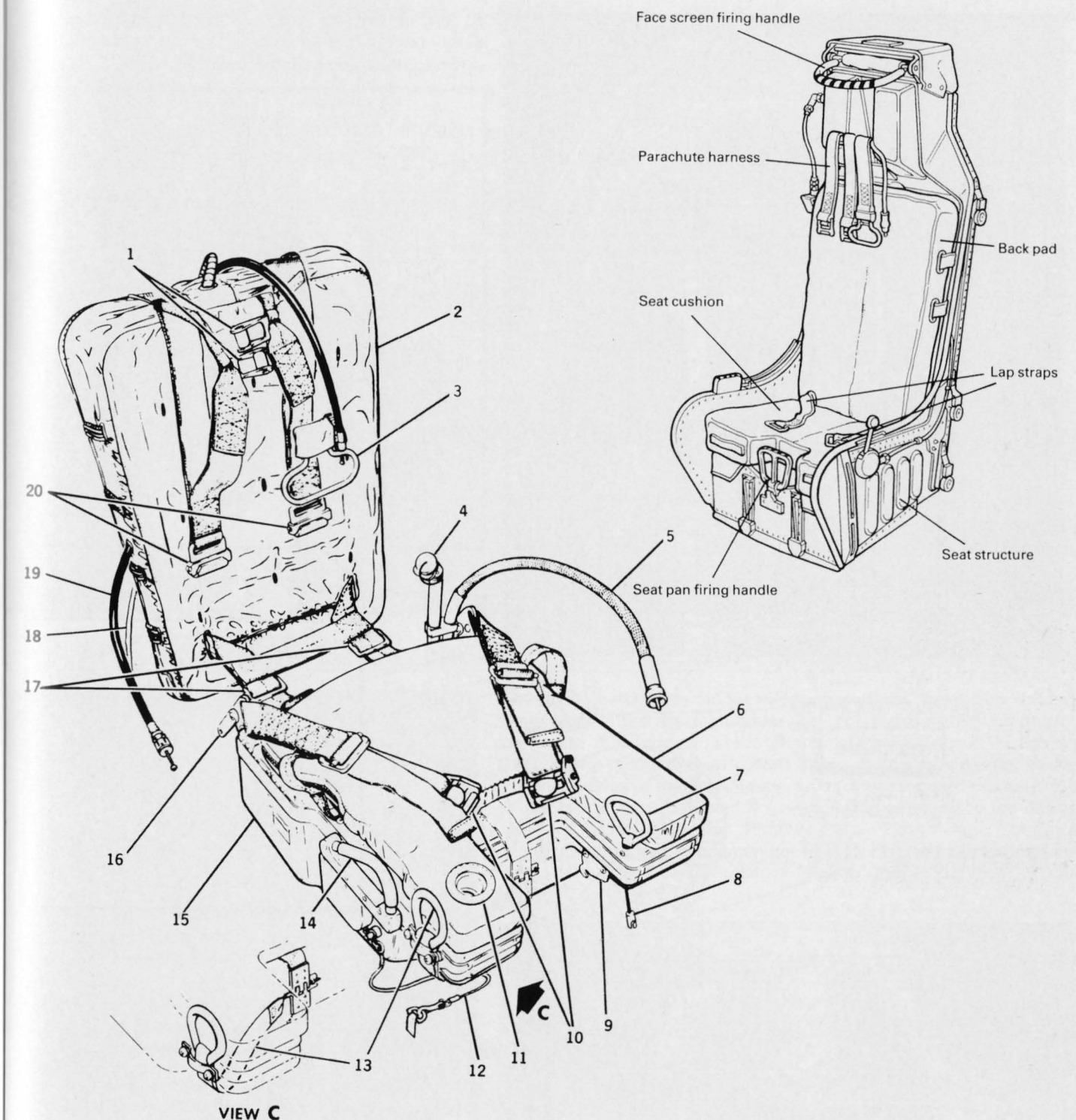




Above and below, A-4M 158160 is seen launching the large TV-guided AGM-62 Walleye missile on 27 May 1972 from the centerline stores station. Some, but not all, A-4Fs were modified for Walleye usage, but all A-4Ms were Walleye capable. VMA-324 was the first active duty A-4M squadron. (Harry Gann)



## IG-3 EJECTION SEAT AND PARACHUTE



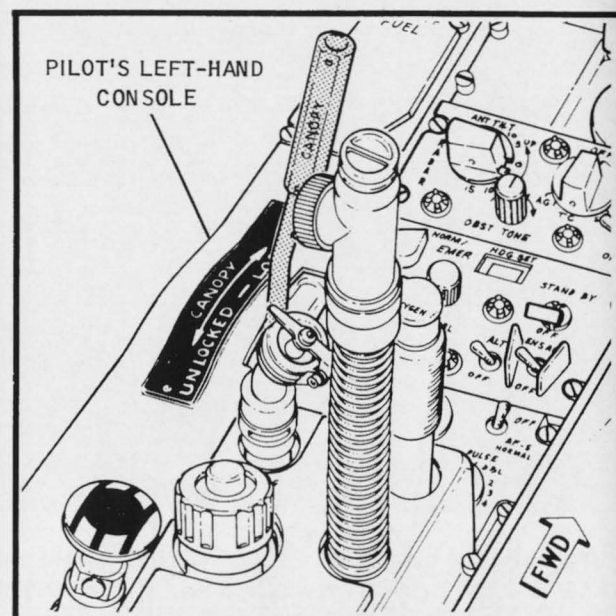
- |                                               |                                                   |
|-----------------------------------------------|---------------------------------------------------|
| 1. SHOULDER HARNESS ROLLER FITTINGS           | 12. AN/URT-33 EMERGENCY RADIO BEACON              |
| 2. NES-12 PARACHUTE (ESCAPAC 1F-3 AND 1G-3)   | AUTOMATIC ACTUATOR LANYARD                        |
| 3. PARACHUTE RIPCORD                          | 13. KIT STRAP RELEASE (ACC 352)                   |
| 4. OXYGEN AND COMMUNICATION HOSE              | 14. MANUAL KIT RELEASE HANDLE                     |
| 5. OXYGEN AND COMMUNICATION HOSE (TO CONSOLE) | 15. RSSK-8B SURVIVAL KIT (ESCAPAC 1G-3/ 1F-3)     |
| 6. CUSHION                                    | 16. SURVIVAL KIT LUG (2)                          |
| 7. EMERGENCY OXYGEN (MANUAL) HANDLE           | 17. NYLON HARNESS STRAPS                          |
| 8. EMERGENCY OXYGEN LANYARD (AUTOMATIC)       | 18. STATIC LINE (EPC)                             |
| 9. SURVIVAL KIT HOOKS (2)                     | 19. PARACHUTE ARMING LANYARD                      |
| 10. HIP HARNESS RELEASE FITTINGS              | 20. SHOULDER HARNESS FITTINGS (PARACHUTE RELEASE) |
| 11. EMERGENCY OXYGEN PRESSURE GAGE            |                                                   |



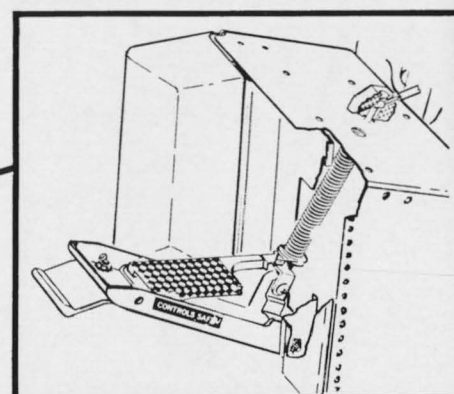
## IG-3 EJECTION SEAT AND PILOT'S FITTINGS



At left, aft cockpit and seat. Note ejection control safety handle in the center of the headrest is pulled down to the safe position. (Doug Slowiak)



CANOPY INTERNAL CONTROL HANDLE FOR NORMAL OPENING



EJECTION CONTROL SAFETY HANDLE (DOWN POSITION)

### WARNING

- WHEN CANOPY IS JETTISONED, SEAT-CATAPULT INTERLOCK IS EXTRACTED AND CARE SHOULD BE TAKEN TO AVOID FIRING SEAT-CATAPULT CHARGE.
- PULL EJECTION CONTROL SAFETY-HANDLE DOWN PRIOR TO REMOVAL OF PILOT FROM SEAT.

DISCONNECT PILOT'S HOSE FROM SEAT PAN AT THE QUICK-DISCONNECT FITTING.

DISCONNECT G-SUIT HOSE

SEAT EJECTION HANDLE

### WARNING

DO NOT PULL SEAT EJECTION HANDLE.

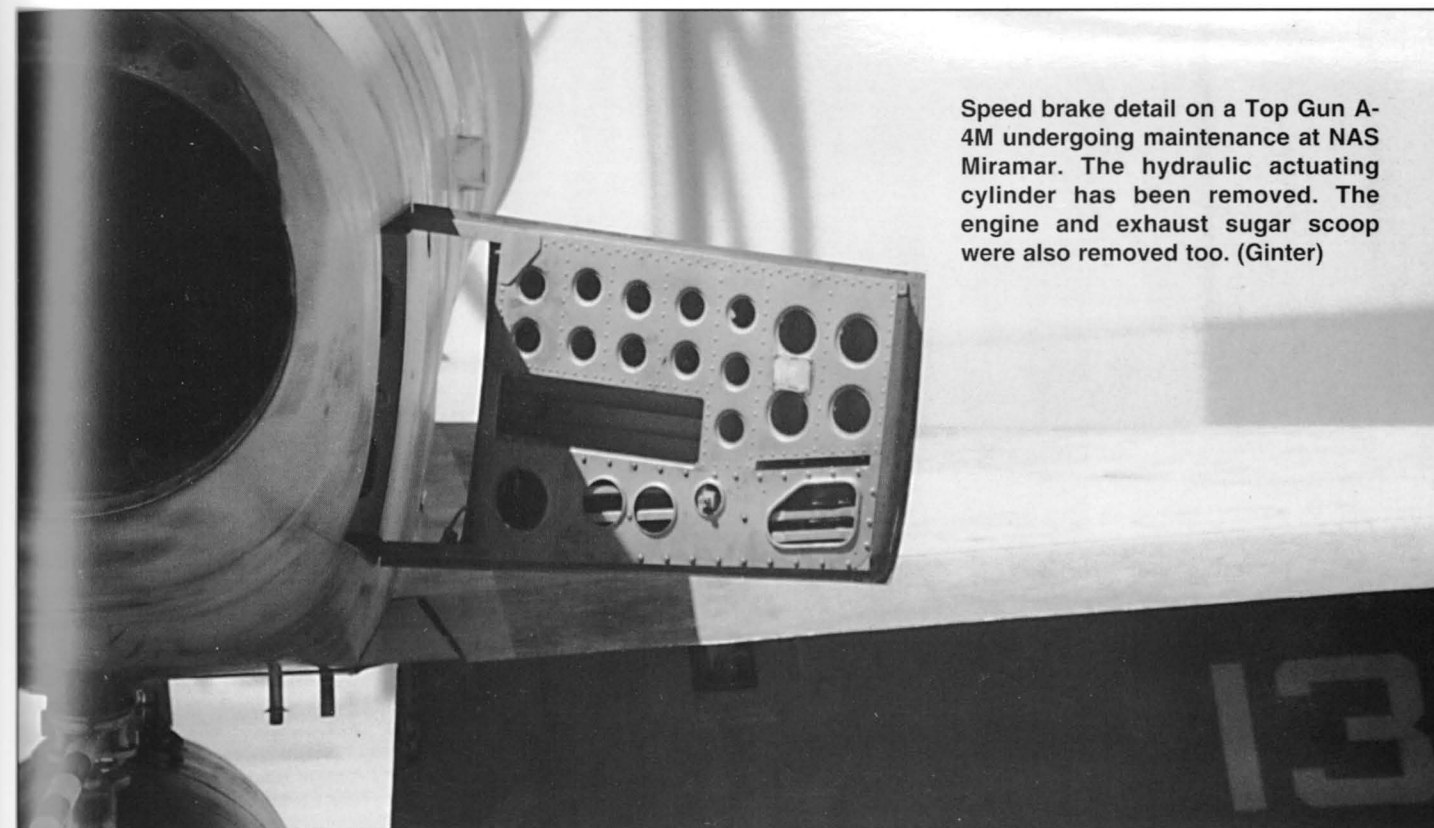
TO PREVENT PILOT SUFFOCATION, REMOVE OXYGEN MASK.

TO RELEASE PILOT, RELEASE FOUR QUICK-DISCONNECTS OR CUT WEBBING.



OXYGEN HOSE

## SPEED BRAKE

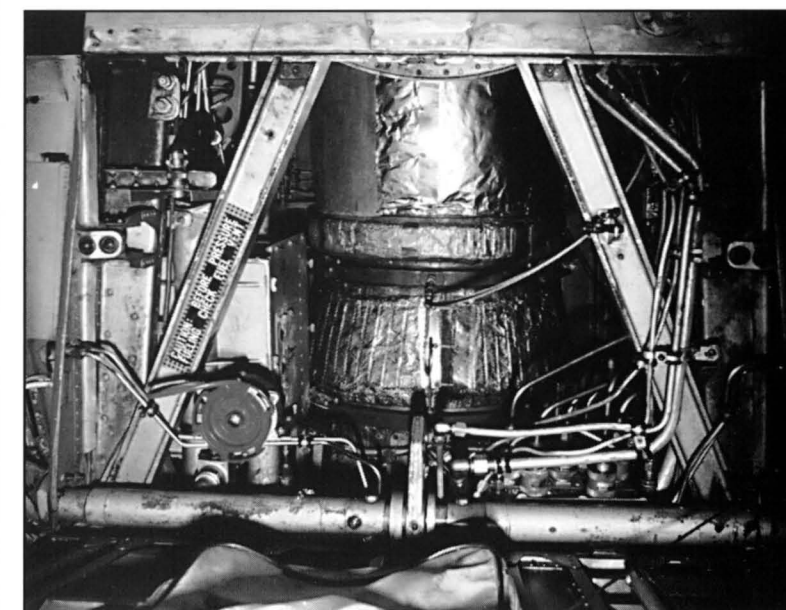


Speed brake detail on a Top Gun A-4M undergoing maintenance at NAS Miramar. The hydraulic actuating cylinder has been removed. The engine and exhaust sugar scoop were also removed too. (Ginter)

## AFT FUSELAGE BELLY HATCH AND PRESSURE FUELING POINT



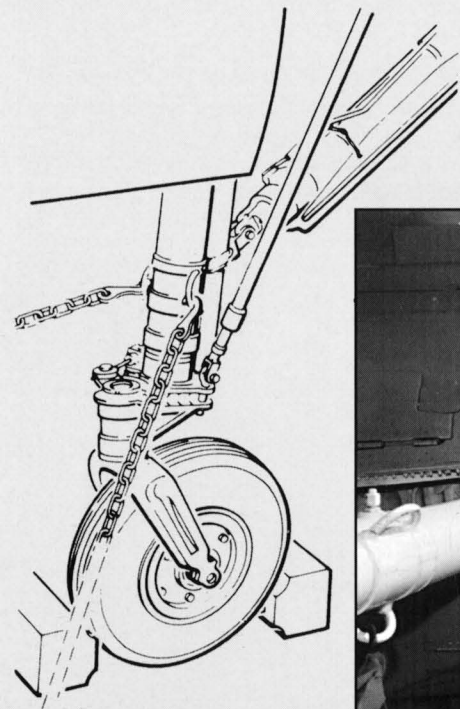
The belly hatch/door is located between the flaps and extends across the entire fuselage underside. The pressure fueling point is the round object located at the left side of the fuselage at the forward edge of the compartment in both these photos. It is painted red as are the insides of the flaps/spoilers. The large forward opening door at left is zinc chromate and the orange bag attached to the door is used for the safety pins or "Remove Before Flight" flags. The wording on the structural crossmember next to the pressure fueling point reads "Caution: Before Pressure Fueling Check Fuel Vent". (Doug Slowiak)



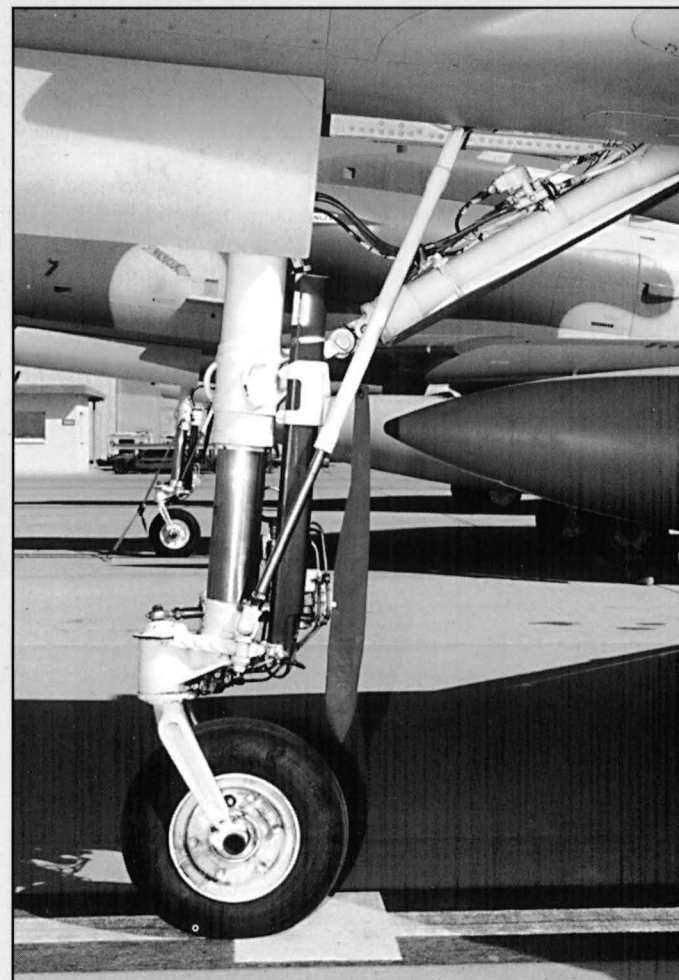
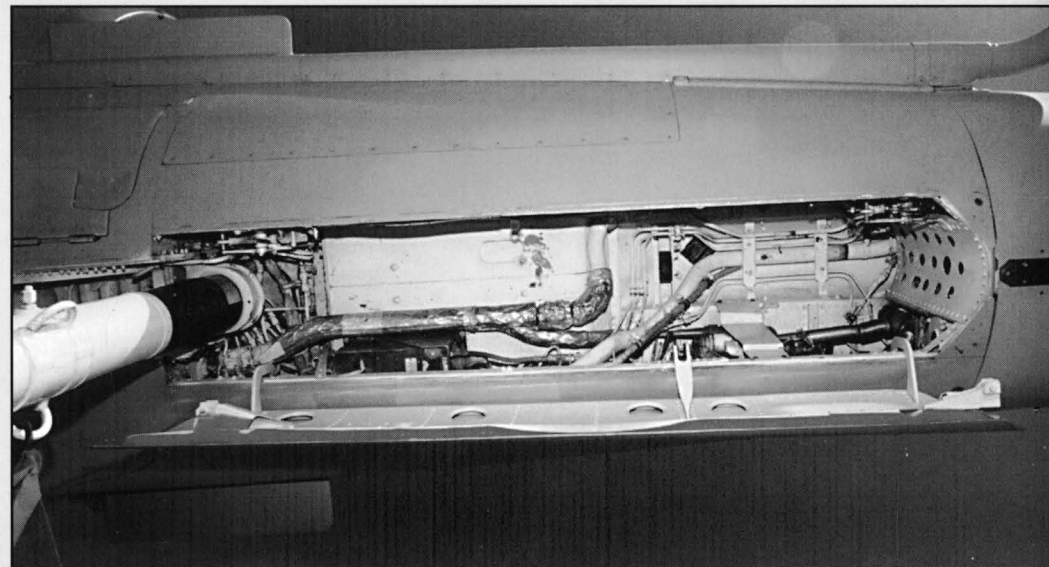


## NOSE GEAR

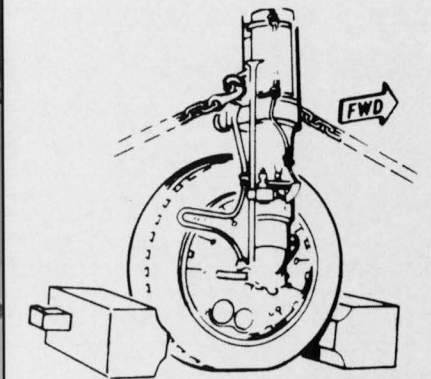
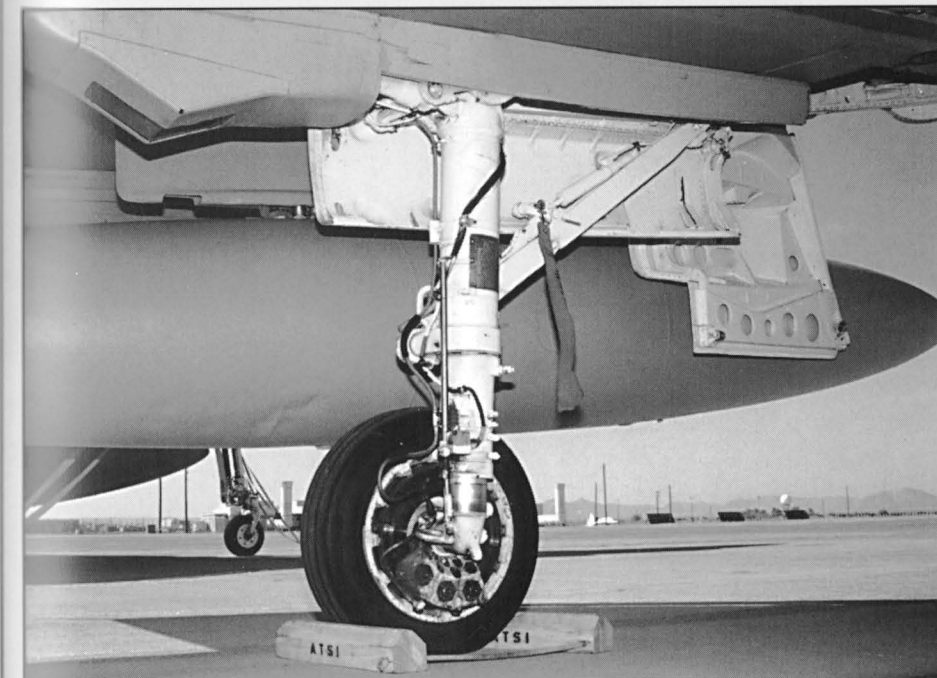
Below, A-4N nose gear details. (Doug Slowiak)



NOSE GEAR TIEDOWN

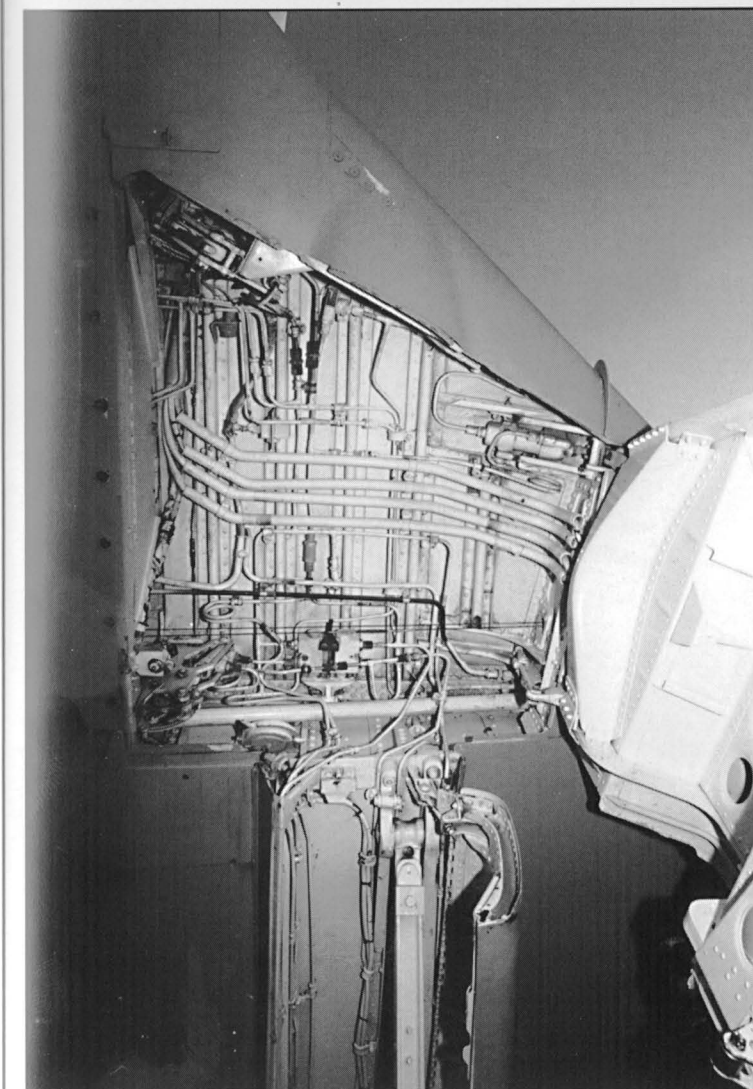


## LEFT MAIN GEAR AND GEAR WELLS



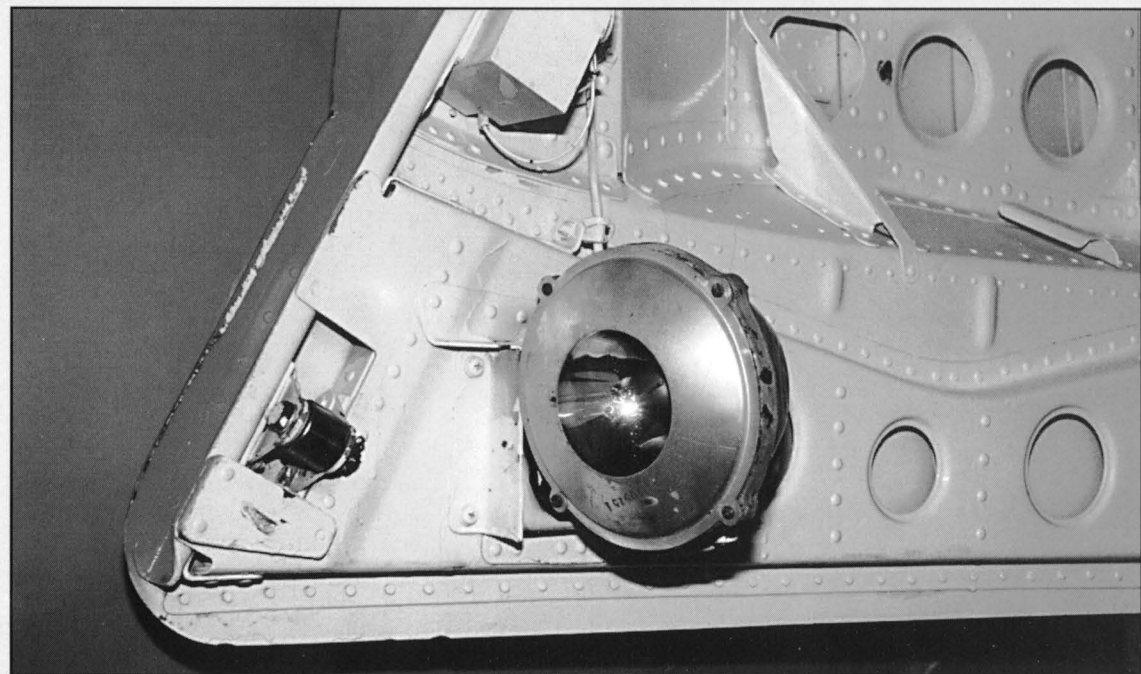
MAIN GEAR TIEDOWN  
(TYPICAL BOTH SIDES)

At left, A-4N left main gear looking outward. Note aft-facing KB-18A bomb damage assessment camera faring behind main gear. Below right, forward left main gear well. Below, left aft main gear well. (Doug Slowiak)





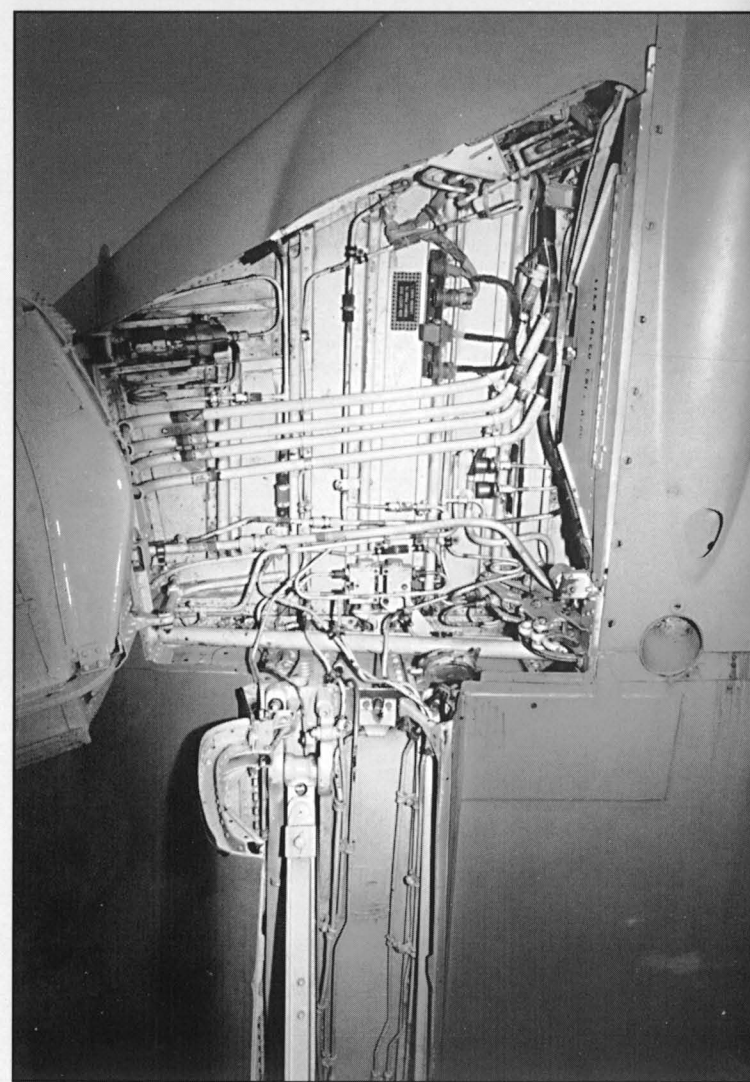
## RIGHT MAIN GEAR DOOR AND WELLS



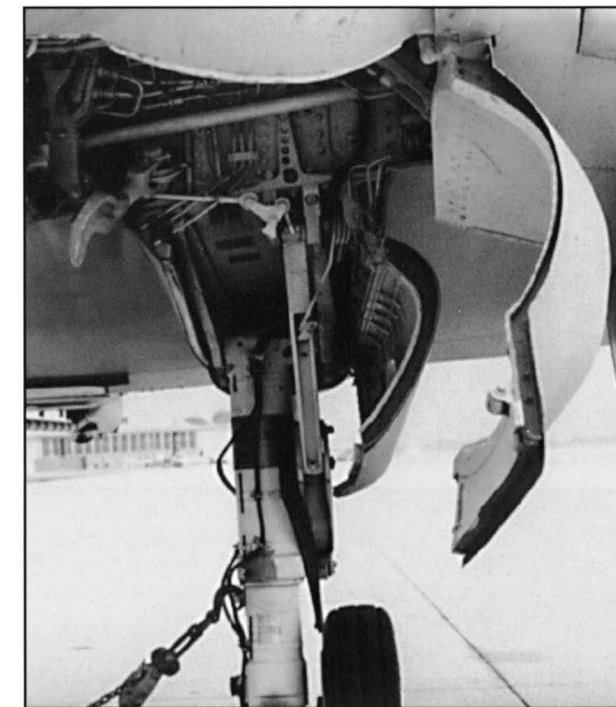
At left, right main gear door landing light. (D. Slowiak)

Below left, aft right main gear well. (D. Slowiak)

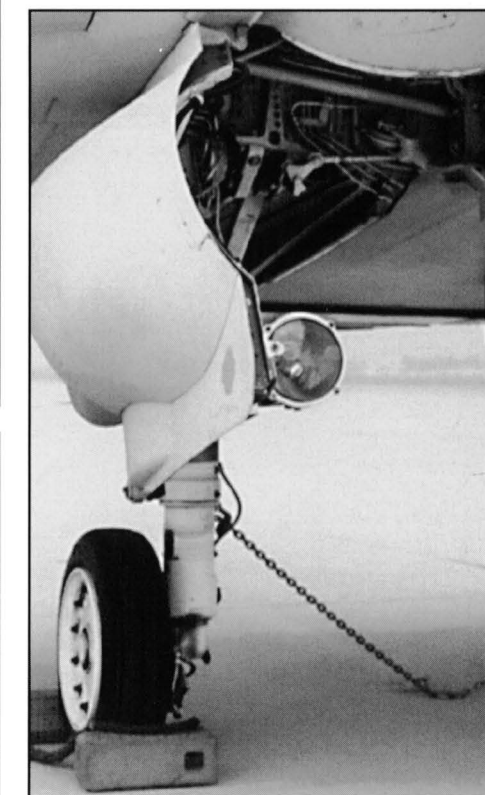
Below, forward right main gear well. (D. Slowiak)



## REDESIGNED GEAR DOORS BuNo 160036, 160241 - 160264 (BIG DOORS)



The last Skyhawk built, A-4M BuNo 160264, had enlarged fore and aft main landing gear doors that were bulged and rounded and offered a greater interior capacity. The reason these doors were designed and installed is unknown. The leading edge fairing for the forward door was also enlarged. (Wayne Morris)





## NAVAL AIR TEST CENTER (NATC) PATUXENT RIVER MARYLAND



The Naval Air Test Center (NATC) is responsible for determining an aircraft's suitability for use in the fleet. Additionally, they supply an evaluation team to the contractor's plant for a Navy Preliminary Evaluation (NPE), a formal series of tests with the prototype models prior to the production aircraft's arrival at PAX River. Once at NATC, the Board of Inspection and Survey (BIS) conducted fleet suitability evaluations. Once BIS trials were completed the aircraft were retained for further development work.

Below, the first production A-4M, BuNo 158148 (see page 4), was assigned to the Naval Air Test Center for BIS trials. Seen here on 27 April 1972, the aircraft has black photo tracking lines painted on the fuselage sides. (Frank MacSorley) Bottom, 158148 in colorful white and black scheme with NATC insignia on the tail on 2 November 1975. The colors were reversed on the other side of the aircraft with white on top and black on the bottom. This aircraft would retain this scheme when transferred to the Naval Weapons Evaluation Facility. (R. B. Starinchak)



Above, A-4M 158152 on 21 April 1971 was also assigned to PAX River, although no distinctive markings were applied. (Roger Besecker) Below, more colorful A-4M 160264, the last A-4 built, on 20 March 1985 with station code 7T on the tail. Aircraft was two-tone low visibility grey with red nose, tail, and outer wing panels. (Barry Roop) Bottom, A-4M 158430 on 27 May 1989 also in low-viz grey with red trim. SD tail code below the NATC insignia was for Strike Aircraft Test Directorate (SATD). (Terry Love Collection)







Above, diminutive NATC A-4M 158425 refuels from the KC-10A prototype. (via Harry Gann) At left, 158425 with 7T tail code. (Terry Love collection) Below, 158425 with flaps and spoilers fully extended, taxis at Patuxent River on 19 November 1980 with Strike Aircraft Test insignia on tail. (B. N. Thompson) Bottom, 158425 on the ramp at Patuxent River, MD, in March 1978. In all photos aircraft is gull grey with white undersides and red tail, nose and outer wing trim. (via Craig Kaston)



Above, A-4M 158430 with speed brakes out and flaps down, comes in for a landing at PAX River on 1 April 1982. (B. N. Thompson) Below, A-4M 155049 with Strike Aircraft Test insignia on the tail in November 1977. (Bruce Stewart) Bottom, A-4M 158426 at Patuxent River in 1975. (Ron Picciani)



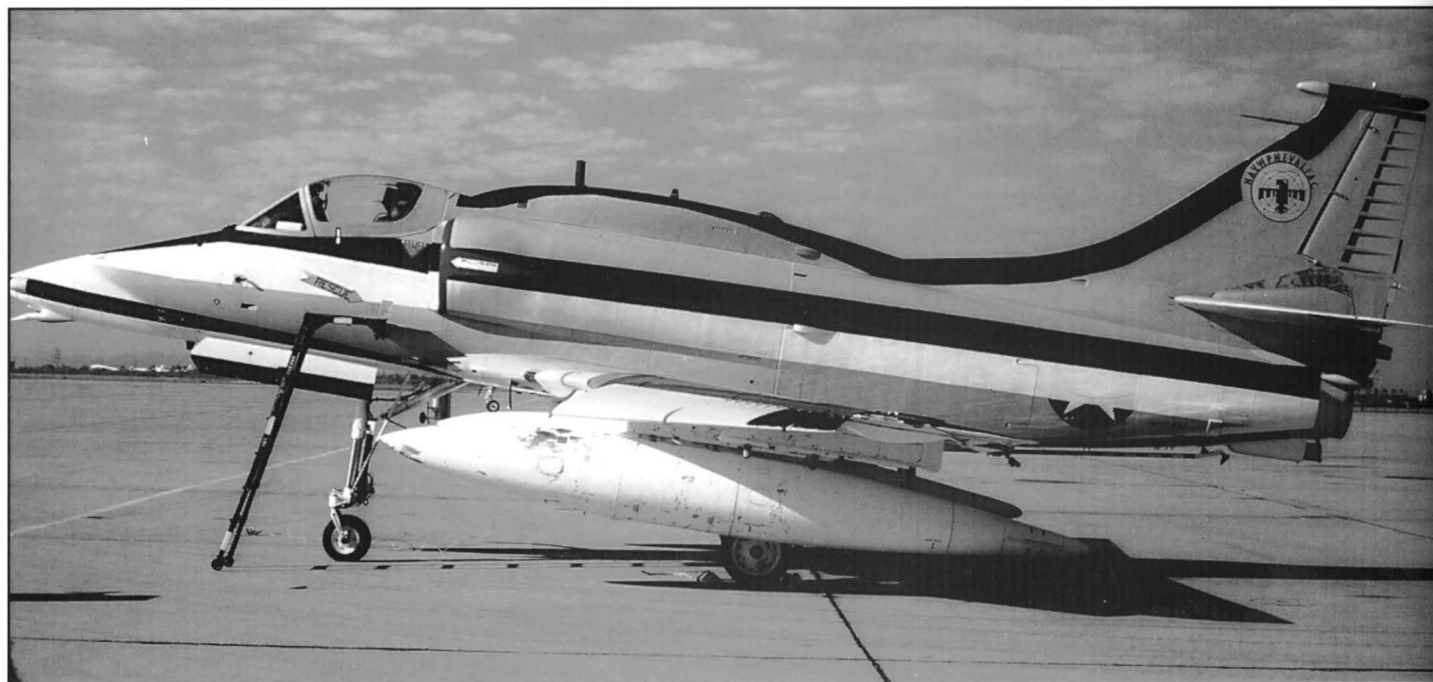


## NAVAL WEAPONS EVALUATION FACILITY (NWEF)



Around 1952 a unit was formed at Kirtland AFB called the Naval Air Special Weapons Facility (NASWF). The unit's designation was changed around 1963 to the Naval Weapons Evaluation Facility (NWEF). The main purpose of the unit was to test, develop and evaluate hardware and procedures for mounting and using new nuclear and other special weapons on current and new Navy and Marine aircraft.

Above right, 158148 on bailment to NWEF in February 1975. (Ron Picciani) At right and below, 160245 on 26 September 1979. Aircraft was grey, white and black with each side different. (Ben Knowles)



## PACIFIC MISSILE TEST CENTER (PMTc)



The A-4M was operated briefly by the Pacific Missile Test Center, NAS Point Mugu, CA. The command was originally called the Pacific Missile Range and was redesignated the Naval Missile Center (NMC) in January 1959. It became the Pacific Missile Test Center (PMTc) in April 1975.

The basic mission of the test center is to take new and existing missile systems and to develop and refine

their usage so they can be integrated into the fleet.

Below, A-4M 158148, the first production A-4M while assigned to the Pacific Missile Test Center in November 1979. PMTC insignia on the tail was applied over a blue stripe. (Jerry Geer via Kaston) Bottom, 1979 photo of A-4M 158148 in flight with four VA-305 Lobo A-7B Corsairs that were also assigned to NAS Point Mugu. (Harry Gann)







## NAVAL WEAPONS CENTER CHINA LAKE

The Naval Weapons Center (NWC) formerly Naval Ordnance Test Center (NOTS), is responsible for research, development, test and evaluation of Naval air launched weapons and weapon systems.



Above left, the last A-4M built, 160264, arrived at NAS China Lake in 1979 in its delivery paint scheme. It was modified from the original scheme by removing Navy from the hump and replacing it with 2nd MAW; also the Roman numeral II was added to Skyhawk on the tail. (USN) At left, 160264 testing the Maverick missile's compatibility with the A-4M on 11 November 1979 while over the Sierra Nevada mountains. (USN) At top, A-4M 160245 piloted by Major John P. Bland near Eglin AFB, FL, with a Hughes AGM-65E laser-guided Maverick missile under its right wing. This Maverick scored a direct hit against an APC on the Eglin range on 27 June 1980. It was the first Maverick launch by a Marine pilot, first launch from a Marine aircraft, and the first launch from an A-4 aircraft. (Hughes Aircraft) Above, 160245 in the hangar at China Lake. (via Kaston) At right, the last A-4 built, 160264, in subdued greys at China Lake on 16 April 1988. (Tim White)







Above, 160264 at the China Lake open house and air show in 1988. The nose number has been painted out, while "044" remains near the top of the fin. (Ginter) Below, Naval Weapons Center A-4M in flight over the California desert. (USN)



## AIR TEST AND EVALUATION SQUADRON FIVE, VX-5 "VAMPIRES"



Air Development Squadron Five (VX-5) was established on 18 June 1951 at NAS Moffett Field, CA. In July 1956 the squadron transferred to NAF China Lake, CA. The unit's designation was changed to Air Test and Evaluation Squadron Five in January 1969.

The squadron's mission was to develop and evaluate aircraft tactics and techniques for the delivery of airborne special weapons. By the time the A-4M arrived in 1979, that mission was expanded to include indepen-

dent test and evaluation of all air-dropped weapons for use in the attack and close support role by the fleet and more specifically the Marine Corps. It also integrated and developed tactics for new and existing electronic warfare self-defense devices in attack aircraft.

Below, A-4M loaded with bombs and Sidewinders. (MDAC) Bottom, VX-5 A-4M 158170 at NAS Lemoore on 10 October 1971. Tail band was green. (William Swisher)







Above, VX-5 A-4M 160245 armed with a Hughes AGM-65E Maverick missile under its right wing. This was the 2,500th Skyhawk built. (USN) Below, VX-5 A-4M 159485 with Marine Corps insignia on the hump and a stylized Naval Weapons Center Eagle on the tail in 1978. (Harry Gann)



### VX-5 VAMPIRES

Above, VX-5 A-4M 158426 on 16 September 1979. Aircraft was gull grey over white with a green tail stripe with Safety Award "S" on the rudder. (Kirk Minert) At right, 158426 on a practice bomb drop test. (Bob Lawson) Below, 158426 hides from the sun in a China Lake hangar between missions on 12 March 1980. (USN)







Like operational A-4Ms, the VX-5 birds converted to a two-tone grey low visibility scheme during the '80s. Above, A-4M 160245 with hook down at Edwards AFB in November 1987. (Ginter) At left, VX-5 A-4M on display at China Lake in October 1984. (Ginter) Below, harsh morning sun reflects off nose of VX-5 A-4M 160264 at Edwards AFB, CA, in November 1986. Nose number was 15. (Ginter)



## MARINE ATTACK TRAINING SQUADRON, VMAT-102 "SKYHAWKS"



VMAT-102 was activated on 1 January 1969 with A-4Cs. In 1970, the unit began receiving A-4E aircraft. It flew the A-4E and TA-4J until supplemented with A-4Fs in August 1973. The A-4M was received in 1975 and the squadron flew it and an assortment of TA-4Js until it was deactivated in 1987.

The squadrons mission was to train replacement attack pilots in:

- A.) Weapons delivery on ground targets
- B.) Close air support

- C.) Armed reconnaissance
- D.) Helicopter support
- E.) S.A.T.S.

Additionally, the squadron provided technical training for maintenance personnel.

Below, VMAT-102 A-4M 158170 at MCAS Yuma on 15 March 1975 with colorful red Skyhawk and red tail. (William Swisher) Bottom, 159788 in July 1980 with red and white rudder and squadron insignia on the fuselage side. (via Craig Kaston)







Above, VMAT-102 A-4M 159488 in a hard bank with six Snakeyes on the centerline in 1976. (Harry Gann) Below, A-4M 159789 in gull grey and white scheme with black lettering in 1976. (Harry Gann) Bottom, red tailed A-4M 159493 in a sharp bank with Zuni pods on the outboard pylons, Mk 82s on the inboard pylons and a centerline drop tank. (Harry Gann)



### VMAT-102 "SKYHAWKS"

Above, VMAT-102 A-4M en-route to the range and then dropping Snakeyes on 26 August 1977. (Harry Gann)

At right, VMAT-102 A-4M 159491 dropping napalm during 1977. (Harry Gann)

Bottom, VMAT-102 A-4M 159782 in October 1980. The red arrow under the canopy carries the pilots name, CAPT. C. L. DOCKERT. His call sign is written below that, it was "BUZZARD". (Craig Kaston collection)







Above, A-4M line at VMAT-102 in 1983. 158166 is in the foreground with the "SC" tail code, rudder markings, and stylized Skyhawk carrying a bomb on the nose in dark grey. Aircraft is carrying practice bombs on its multiple ejector bomb racks. (Harry Gann) At left, 158414 in 1984. Below, close-up of nose antennas, refueling probe, and Skyhawk insignia on a VMAT-102 aircraft in 1983. (Harry Gann)



Above, VMAT-102 flight line in 1983. This aircraft, nose number 15, differed in having a light grey "SC" tail code and rudder trim instead of the dark grey. (Harry Gann) Below, VMAT-102 A-4Ms 158168 (nose number 13) and 160029 (nose number 06) returning from a training flight in 1984. 158168 in the foreground has white rudder stripes between the dark grey rudder ribs and a white VMAT-102 on the side of the fuselage. (Harry Gann)





## MARINE ATTACK SQUADRON ONE TWO FOUR, VMA-124 "WHISTLING DEATH"



Memphis-based VMA-124 received the A-4M in 1985 and relinquished them in 1994. With its eye on the close support mission, the squadron's training was conducted at Fallon, NV, Yuma, AZ, and locally at a bombing range in Mississippi (about 150 miles from Memphis) and a range near Fort Smith, AR. The squadron also participated in Red Flag at Nellis AFB, NV. During May 1989, tragedy struck when BuNo 160251 crashed and was lost. The squadron's final exercise was Final Fury at MCAS Yuma in 1994. The unit, less aircraft, was then moved to NAS Fort Worth Joint Reserve Base (JRB), TX, where it became a paper squadron. It was redesignated VMFA-124 and attached to MAG-41. It was deactivated in 1997 without ever receiving aircraft after losing its A-4Ms in 1994.



Above, VMA-124 A-4M 160243 on 27 July 1992. (Geoff Lebaron via Kaston) Below, VMA-124 insignia was still visible on the side of 160264 in October 1994. (Wayne Morris) Bottom, the last A-4M built was retired from VMA-124. It is seen here at the Marine Aviation Museum, MCAS Miramar, in September 1990. (Ginter)



## MARINE ATTACK SQUADRON ONE THREE ONE, VMA-131 "DIAMONDBACKS"



NAS Willow Grove, PA, based VMA-131 received the A-4M in 1988 as a replacement for their A-4E/F Skyhawks. The Diamondbacks relinquished their A-4Ms in August 1994 and became a paper squadron until their deactivation in 1997.

Above, VMA-131 A-4M 160024 was repainted in this "high viz" scheme in early 1994 by volunteers. Faded, but still colorful in this November 1999 photo, the Diamondback stripe was yellow and black. (Mike Wilson) At right, 159788 at NAS Willow Grove on 21 June 1992. (Barry Roop)



Below, 159473 at Myrtle Beach, SC, on 25 April 1990. (Kevin Foy via Kaston)





## MARINE ATTACK SQUADRON ONE THREE THREE, VMA-133 "DRAGONS"



In 1999 Alameda based VMA-133 traded in their A-4F Skyhawks for A-4Ms provided by VMA-211 when they transitioned to the AV-8B Harrier. When VMA-211 gave the Dragons A-4M BuNo 158428 on 27 February 1990, it marked the last time that the Skyhawk was used by an active duty Attack squadron. The Dragons operated the A-4M until it was deactivated in 1992.

VMA-133 aircraft had almost invisible "ME" tail codes. Above right, 160034 at Alameda on 19 April 1990. At right, 158160 at Alameda on 3 November 1990. (Kaston Collection)



## MARINE TRAINING SQUADRON VMAT-203 "HAWKS"



VMT-1 was established on 1 July 1967 and was redesignated VMT-203 in December of 1967. As VMT-203 they operated at least one A-4M. The unit was redesignated Marine Attack Training Squadron 203 (VMAT-203) on 1 May 1972. They became the East Coast Harrier training unit and received their first AV-8A on 29 September 1974.



Above, VMT-203 A-4M 158193 in late 1970 in company with a VMT-203 TA-4J. Rudder markings were dark blue and tail stripes were red-white-blue. (USMC)

## MARINE RESERVE ATTACK SQUADRON VMA-142 "FLYING GATORS"



The "Flying Gators" transitioned to the A-4M and relocated to NAS Cecil Field in 1978. The A-4Ms were replaced by F/A-18As in 1990 and the Gators were redesignated VMFA-142 on 21 December 1990.

Above, A-4M 160043 at Myrtle Beach, SC, on 10 May 1990 with Flying Gators on the fuselage side and a faint "MB" tail code. (Kevin Foy) Below, Commanding Officer's A-4M 158155 is equipped here with a practice Sidewinder. (Kaston Collection) Bottom, A-4M 159765 with very faint "MB" tail code at Libby Field, Fort Huachuca, AZ, on 7 October 1989. (W. Swisher)





## MARINE ATTACK SQUADRON VMA-211 "WAKE ISLAND AVENGERS"



In August 1976, VMA-211 left their A-4Es behind at Iwakuni, Japan, and were relocated to MCAS El Toro, CA. In September, the squadron re-equipped with the A-4M Skyhawk.

The unit deployed with the "Mike" to Japan from July 1979 to June 1980. 21 aircraft were assigned. These were nose number (1) BuNo 160045, (2) 158170, (3) 158177, (4) 159488, (5) 159785, (6) 159481, (7) 160041, (10) 159492, (11) 158152 was lost on 4 February 1980, (12) 158192, (13) 158417, (14) 159472, (15) 158164, (16) 158414, (17) 158165, (20) 160034, (21) 158413, (22) 160027, (23) 158155, (24) 158156, and (25) 160028.

While back at El Toro, on 15 July 1982, 1st Lt Randy Myers made an emergency landing after suffering a holed fuel line during a firepower demonstration for NROTC students



at Camp Pendleton, CA. When he pulled off target a hatch broke loose causing the damage. He also suffered a generator failure en-route to El Toro.

211 returned to Japan in December 1983 and the squadron departed for home in June 1984. During this tour, BuNo 159488, nose number 19, was lost on 11 January 1984. During the return trans-pac, the stop at Wake Island presented a touching moment for the skipper, LtCOL J. B. McAnally. His father, Cpl W. J. McAnally, was one of the original defenders of the Island and was

**Above, two Avenger A-4Ms in flight off the coast of California in 1977. Red stripes have been added to the rudders and the speed brakes are open. The fuselage speed brake wells were dark zinc chromate and the inside of the speed brakes were red. (Harry Gann) Below, VMA-211 A-4M 159481 on 2 September 1976. The large squadron insignia on the fuselage side is yellow/orange with red island and wolf. (T. R. Waddington)**

captured by the Japanese. For their achievements during this deployment, VMA-211 was awarded the



Lawson Sanderson Award for attack squadron of the year.

The unit once again deployed to Japan from June 1987 through December 1987. From 4 July through 18 July, the Avengers conducted detachment operations at Kadena AB, Okinawa, with 8 A-4Ms. While there the squadron flew numerous sorties in support of Marine Air Support Squadron Two. From 27-30 July 1987 an ORE inspection was conducted.

211 deployed to Kadena AB again with 14 A-4Ms and participated in WINGEX 87. They also conducted

dissimilar air combat training (DACT) with F-15s from the 18th TFW. While at Kadena they surpassed 10,000 hours of accident free flying.

In September, the squadron established a turnaround detachment at Kwangju AB, Republic of Korea, from 4 to 21 September. On 5 September two aircraft made an emergency divert into Chihhang, Taiwan. They returned to Iwakuni on 11 September after repairs. The Avengers closed out FY 1987 with 5,350.4 flight hours.

VMA-211 deployed to NAS Cubi Point, Republic of the Philippines,

**Above, four VMA-211 A-4Ms in flight in 1977. (Harry Gann) Below, VMA-211 A-4M 158418 in flight in 1978. (Harry Gann)**

from 8 October to 21 November 1987. While there, the Avengers participated in Cope Thunder 88-1. This exercise provided the squadron with training in multiple aircraft strikes and with the opportunity to fly with Air Force, Navy and Allied forces. Furthermore, six pilots were designated as low-altitude Instructors (LATI). On 6 November, a surge day was conducted with the squadron and 53 ordnance sorties were completed.







From MCAS Iwakuni, the Avengers launched a two-aircraft CONUS advance party with the VMAQ-2 Det X TRANSPAC on 10 November 1987. The advance party arrived at MCAS Yuma, AZ, on 13 November and started preparations for establishing VMA-211 at its new home base. The official transfer occurred in December with 15 additional aircraft, 16 officers, and 19 enlisted personnel. Meanwhile, at Yuma, the two aircraft were used to train new personnel joining the squadron from the recently decommissioned VMFAT-101 (F-4 fleet replacement squadron) and VMAT-102 (A-4 fleet replacement squadron). In Iwakuni, the Avenger pilots TRANSPAC qualified on KC-10s and on 8 December the remain-

ing 15 aircraft departed Japan for MCAS Yuma. The TRANSPAC would involve stops at Wake Island and Kaneohe Bay, HI, before the final flight into Yuma.

December 1987 and January 1988 were used to continue training the new hands and prepare for operation Kernel Blitz 88-1. The operation was conducted from 1-15 February. The Avengers closed out the month flying in support of exercise Crown Falcon 88-02, a close air support exercise in support of the 27th Tactical Air Support Squadron at George AFB, CA.

The squadron deployed to 29 Palms EAF, CA, from 29 April to 16 May as the fixed-wing component of

Above, VMA-211 A-4M 160031 at MCAS El Toro on 15 May 1977. Notice how the underside white wraps around the nose. (William Swisher) Below, A-4M 158165 at NAS North Island, CA, on 9 April 1978. LT J. W. Higgins' name is painted under the canopy rail on a red stripe. (William Swisher)

the ACE for CAX 6-88. The squadron's first deployment since WestPac provided valuable training in close air support, air combat maneuvering, and special weapons employment. A total of 213 sorties were flown in support of the ground elements.

From 1-2 June, 211 participated in a Rockeye and FAE weapons eval-



Above, VMA-211 A-4M 159488 landing at Yakota AB, Japan, on 10 April 1980. Note pre-1943 style national insignia on the tail. (Toyokazu Matsuzaki) At right, A-4M 160033 in January 1983. The rudder was grey with red stripes. (Ginter) At right middle, A-4M 158191 in August 1982. (Ginter) Bottom right, VMA-211 A-4M landing at NAS North Island in July 1982 in the new low viz paint scheme. (Ginter)



uation sponsored by the Weapons Quality Engineering Center, Fallbrook, CA. From 9-12 June, a detachment of four aircraft participated in SENTRY EAGLE III at Kingsley Field, OR, flying air combat missions with units from Canada, the Air Force, Air National Guard, Navy, and Marine Corps. On the 26th of June the squadron surpassed 15,000 mishap free flight hours.

In August the unit participated in GALLANT Eagle 88. The squadron operated from MCAS Yuma as part of a joint force in support of the US Central Command, flying 72 sorties for ground units at 29 Palms, CA. Two live Shrike missiles were fired as well as the dropping of 132 500 pound bombs during 44 sorties.

From 6-21 October 1988 the squadron deployed to NWC China Lake for extensive electronic warfare training and live weapons practice. The squadron participated in QUICK FORCE 89-1 from 27-28 October.







### VMA-211

Above, two-tone grey scheme along the vertical line on A-4M 159489 with large white tail code "CF" and VMA-211 AVENGERS on the fuselage side. (via Wayne Morris) At left, two-tone scheme along the vertical line on 159781 with light grey "CF" tail code and medium grey VMA-211 AVENGERS on the fuselage side. (via Burger) Below, A-4M 158429 at NAF Atsugi on 20 May 1984; "CF" tail code and rudder stripes were dark grey. VMA-211 WAKE AVENGERS appear in light grey on the fuselage side. (Toyokazu Matsuzaki)



Their final rotation to Japan began in December 1988, which was also the last operational Marine deployment of the A-4. The deployment lasted through June 1989. In December the squadron commenced full-scale operations flying air combat missions with F/A-18s, and combined strike missions with A-6 and EA-6B aircraft. 211 finished its first month in Japan with 415 flight hours.

After arriving back at Yuma, the Avengers prepared to transition into the AV-8B Harrier. The last operational Marine A-4M, BuNo 158428, left Yuma on 21 February 1990 for its new home with VMA-131, a reserve unit at NAS Alameda, CA.



Above right, VMA-211 A-4M 159479 at a Davis Monthan AFB air show on 16 March 1985. Nose and tail markings are dark grey. (William Swisher) At right, 158191 at Klamath Falls airport in May 1987. Dark markings were dark grey not black. (Norm Taylor collection) Below, 159492 at Luke AFB on 10 April 1987. A large low viz squadron insignia has been painted on the fuselage side and WAKE ISLAND has been painted on the tail. (Bob Leavitt)





## MARINE ATTACK SQUADRON TWO ONE FOUR VMA-214 "BLACK SHEEP"



VMA-214 received the A-4M Skyhawk in 1973 and deployed to Japan with the M from July 1977 through July 1978. Aircraft used were: nose number (00/450) BuNo 158162, (1/451) 160044, (2/452) 160043, (3/453) 160040, (4/454) 160033, (5/455) 160029, (6/456) 160027, (7/457) 159472, (8/460) 159778, (9/461) 159784, (10/462) 159780, (11/463) 159779, (12/464) 159489, (14/465) 158435, (15/466) 158433, (16/467) 158424, and (17/470) 158419.

A second M deployment occurred from June 1980 through December 1980 with the following aircraft: nose number (1) BuNo 160034, (2) 160045, (3) 158177, (4) 159488, (5)



159785, (6) 159481, (7) 160041, (10) 159492, (11) 160028, (12) 158192, (13) 158417, (14) 159472, (15) 158164, (16) 158414, (17) 158165, (20) 158170, (21) 158413, (22) 160027, (23) 158155, and (24) 158156.

A third deployment occurred from December 1981 through June 1982. Just prior to this deployment, Capt

Above, A-4M 158428 at MCAS El Toro in March 1973. Tail and drop tank markings were black. (William Swisher) Below, 158412 in 1973 with black ram's head added to the fuselage side. (Fred Roos) Bottom, 158427 was the mount of the Commanding Officer, LtCol Newton in 1973. (Fred Roos)

Joe Krejimas ejected from BuNo 159481 after a failure of the burner



pressure system in the landing pattern at Yuma. During the deployment the unit participated in exercises Cope Thunder 82-3, Coral Aces/Cope Diamond 82-2 and 82-3, Team Spirit 82, and Valiant Blitz 82. At the completion of this deployment all the squadron's aircraft were transferred to VMA-331 for use in Japan. In October 1982, the squadron was awarded the Lawson H. M. Sanderson Award for Attack Squadron of the year for 1982.

In early 1983, the pilot of BuNo 160041 landed 1/4th of a mile short of the runway during a night approach at the "stumps" (29 Palms), CA. The landing sheared the landing gear off and the resulting skid over the desert and onto the runway and into the arresting gear destroyed the aircraft. After re-usable parts were removed the aircraft was left in place as a crash crew trainer. It was concluded that the accident was caused by weathered lenses on the runway approach lights.

During 1983 the squadron took part in operations CAX 4-83, Kernal Blitz 1-83, Comfort Levels V and VII along with Kernal Usher, and a TransCon deployment to NAS Cecil Field, FL.

From 5 to 27 July 1984 the Black Sheep deployed to NAS Fallon, NV, for continued weapons training. 51.3 hours and 37 sorties were flown in the air-to-air environment and 253.5 hours in 205 sorties were flown in the



Above, VMA-214 A-4M 158420 in 1974. The white stars have disappeared from the drop tank side stripes. (Craig Kaston) Below, VMA-214 fires Zuni rockets at a desert range. (Harry Gann) Bottom, flight of three VMA-214 A-4Ms. 158422 is in the foreground, 158432 is behind it and 158420 is in the lead position. (Harry Gann)







Above, upgraded 160044 in flight in 1976. (Harry Gann) At left, four VMA-214 A-4Ms in flight in 1977. (Harry Gann) Below, A-4M 160027 at MCAS El Toro just prior to the squadron's first A-4M deployment on 15 May 1977. MARINES was painted in medium grey. (William Swisher)

air-to-ground environment. The squadron also participated in Red Flag 84-4 with 9 pilots during the two day event.

Four officers, nineteen enlisted men and two aircraft deployed to 29-Palms from 24 to 28 August 1984 in support of Combined Arms Exercise (CAX) 10-84. Their main mission was dropping smoke bombs to cover troop movements.



From 5 to 12 September 1984 the squadron took part in operation Gallant Eagle 84. This was a joint training exercise designed to employ Marine tactical air within a combined Air Force and Marine command and control system.

The Blacksheep embarked for a winter deployment to Hill AFB, UT, on 27 November 1984 with a complement of 14 aircraft. The severe northern conditions of snow, wind, and ice provided excellent cold weather train-

ing.

The squadron conducted two nuclear exercises, one on 11 December 1984 and one on 24 January 1985. Additionally, four pilots were qualified as nuclear weapons delivery and air combat tactics instructors during 14 to 18 January 1985.

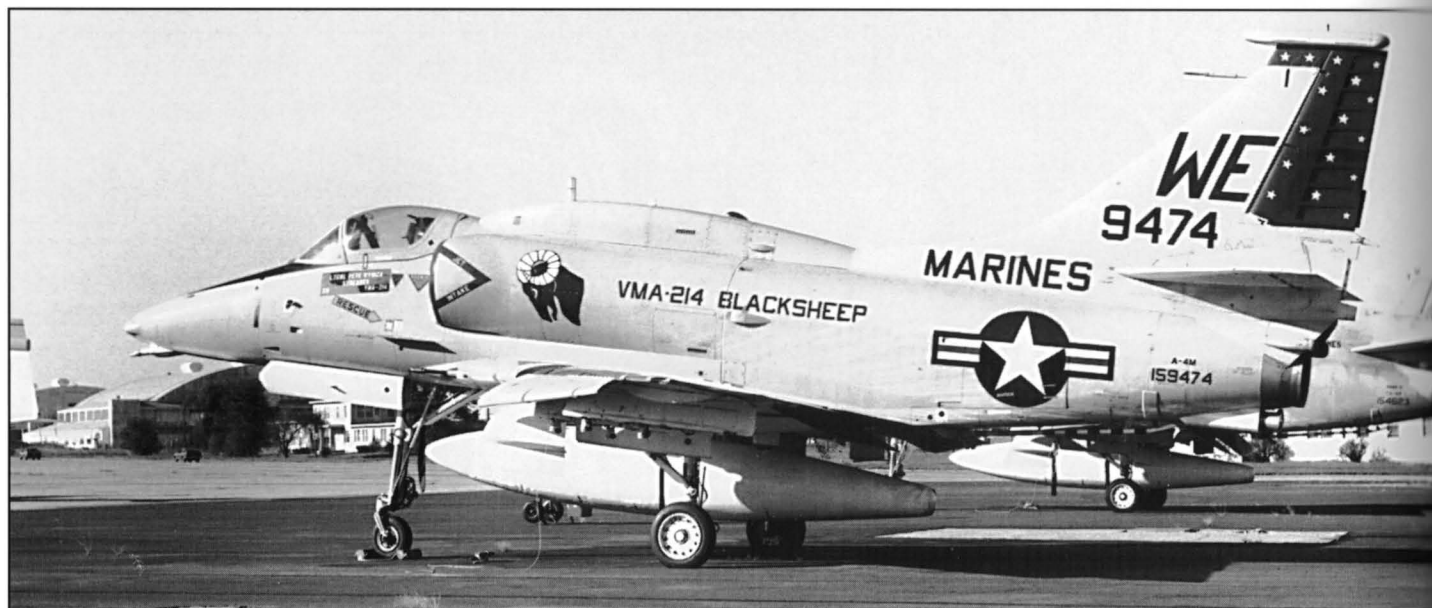
One of the most bizarre events in modern Marine aviation occurred in the early morning hours of 4 July

Above, A-4M 160027 at NAF Misawa, Japan, on 15 September 1977. (Masumi Wada via Kaston) Below, carrier qualifications aboard the USS Coral Sea on 31 August 1977 off the coast of Japan. (USMC)

1986. LCpl Howard Foote Jr. deliberately stole a Skyhawk from 214's flight line. LCpl Foote was a squadron mechanic who was studying to become a Marine pilot and was an accomplished glider pilot. He had







Above, 159474 at Forbes AFB, KS, in September 1979. (Jerry Geer via Norm Taylor) At left, 160043 at MCAS Yuma on 14 February 1980. (William Swisher) Below, 159790 at MCAS Yuma on 14 February 1980 in tactical two-tone grey scheme. (William Swisher)

been given instruction and simulator training by the squadron's pilots, however, a medical problem blocked him from being accepted into the flight training program. So, with nothing to lose, he powered-up an A-4M from the flightline and conducted a 35-



minute flight before a generator failure forced him to return to El Toro. He faced nine years in prison for this stunt, but was discharged from the service instead.

The squadron deployed once again to Japan from December 1986 through June 1987. Upon returning to CONUS, the squadron's home base was transferred to MCAS Yuma. A final WESTPAC deployment to Japan was made from June 1988 through December 1988. In June 1989, the squadron received the AV-8B Harrier.

Above, 158170 at Yokota AB on 6 July 1980. All lettering and rudder tabs were black. (T. Matsuzaki) At right, 160027 in August 1981 (via Kaston) Below, 159785 at NAF El Centro in low viz two-tone grey scheme on 13 February 1983. (Doug Slowiak)







Above, low viz A-4M 158423 at Luke AFB, AZ, on 11 May 1985 (Doug Slowiak) Below, A-4M 159779 lifts off the runway at Yokota AB on 4 November 1988. Tail code, Blacksheep and nose number were dark grey. (T. Matsuzaki) Bottom, A-4M 160030 at MCAS El Toro in April 1989. Codes were dark grey; COMMANDING OFFICER LtCol T. H. CARSTENS "GROUCHO" was painted below the canopy sill. (Ginter)



## MARINE ATTACK SQUADRON TWO TWO THREE VMA-223 "BULLDOGS"



The Bulldogs exchanged their A-4F Skyhawks for the A-4M in May 1975. From 20 through 23 January 1976 the squadron conducted a live

firing, air-to-air gunnery exercise. Then, in April they conducted a live Sidewinder missile shoot. The training served the unit well as they won the May air-to-ground 3-day ground firepower exercise in both team and individual pilot competition.

The squadron departed MCAS Yuma for its first A-4M deployment on 23 July 1976. Eight days later, 17 VMA-223 aircraft landed at Iwakuni, Japan. While deployed, the squadron operated as adversary aircraft against F-14 Tomcats at NAS Cubi Point, P. I., and flew in support of Operation MULTIPLEX, a Japanese Air Self Defense Force exercise. The squadron also participated in exercise COPE THUNDER III at Clark

AFB, P. I. They also participated in amphibious operation KANGAROO II/BEACH LINK from 14 October through 3 November in Australia. In December 1976, 223 conducted carrier qualification on the USS Enterprise (CVAN-65). The squadron rotated back to the United States in July 1977 and relocated to MCAS Cherry Point, NC.

Below, A-4M 159472 in 1975 with MAJ. TOM REEVES painted below the canopy sill. Bottom, 159479 with 159476 in the background in 1975. VMA-223 A-4Ms had a diagonal yellow band on the nose and yellow and black rudder trim. (Fred Roos)







Above, A-4M 159483 belonging to the commanding officer of VMA-223 on 4 July 1977 at Yokota AB, Japan. Note large squadron insignia on the fuselage side. (T. Matsuzaki) Below, same aircraft at NAS Moffett Field, CA. The yellow nose stripe shows off well in this photo. (William Swisher)

Aircraft operated during the July 1976 through July 1977 WestPac deployment were: BuNo 159483 nose

number (00), 159487 (1), 160022 (2), 159783 (3), 159790 (4), 159470 (5), 159779 (6), 159477 (7), 159478 (8), 159479 (9), 159490 (10), 159778 (11), 159482 (12), 159484 (14), 159489 (15), 159486 (16), and 159784 (17).

The squadron's second A-4M deployment to Japan from June through December 1981 was conducted with the following aircraft: BuNo 160241 nose number (1),

160251 (2), 160263 (3), 160254 (4), 158161 (5), 160256 (6), 160247 (7), 160248 (8), 160249 (9), 158185 (10), 158421 (11), 159478 (12), ????? (13), 159486 (14), 160261 (15), 160257 (16), 158151 (17), 160045 (18), 159472 (19), 160262 (20), and 160260 (21). During the deployment BuNo 158151 was lost during routine flight operations.

A third West Pac deployment with the A-4M from December 1982



through June 1983 was conducted with the following aircraft: BuNo 160260 nose number (1), 160251 (2), 160263 (3), 160254 (4), 160244 (5), 160256 (6), 160247 (7), 160248 (8), 160249 (9), 160252 (10), 160242 (11), 160243 (12), ????? (13), ?????

(14), 160261 (15), 160257 (16), 160257 (17), 160258 (18) and 160255 (19).

The squadron returned to MCAS Cherry Point and transitioned to the McDonnell Douglas AV-8B Harrier II in October 1987.

Above, six VMA-223 A-4Ms during a live fire Zuni exercise in 1978. (Harry Gann) Below, two views of CO's aircraft 159483 and 158158 en-route to target. The squadron's insignia has been added to the fuselage sides. (Harry Gann)







#### VMA-223

Above, 158187  
WP/12, 158171  
WP/11, 159477  
WP/7, 159490  
WP/10, 158158  
WP/18 and  
159483 WP/00 in  
echelon forma-  
tion. (Harry  
Gann) At left,  
VMA-223 A-4Ms  
158187 and  
158171 drop-  
ping Snakeye  
bombs in 1978.  
(Harry Gann)  
Below, 158158  
and 159482  
climbing out in  
1978. (Harry  
Gann)

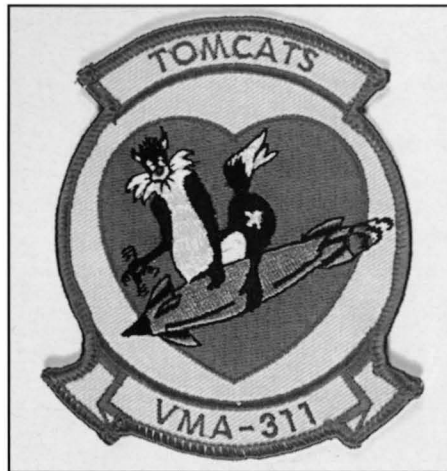


Above, A-4M 160243 at Nellis AFB, NV, in 1982. (Craig Kaston) Below, when VMA-223 deployed to Japan in June 1981 it took over VMA-331's A-4Ms. 160254 had a yellow WP applied to the tail and a very small 223 replacing the 331 on the fuselage side. (T. Matsuzaki) Bottom, low viz 160039 at Nellis AFB, NV, in 1982. (Craig Kaston)





# MARINE ATTACK SQUADRON THREE ONE ONE VMA-311 "TOMCATS"



While stationed at Iwakuni, Japan, with A-4Es, VMA-311 was disestablished on 5 June 1974. The aircraft were turned over to the Navy for shipment to the United States, while the personnel and equipment were distributed to other MAG 12 units. The squadron was reestablished at MCAS Beaufort, SC, with the A-4M on 1 September 1974 with the assets and most of the personnel of disestablished VMA-324.

The squadron concentrated on special weapons training during September with an NTPI inspection and then a deployment to NAF China Lake to sharpen delivery skills. January 1975 found the squadron aircraft grounded due to a problem with the VSCF generator. Carrier qualifications were conducted in February aboard the USS John F. Kennedy



Above, close-up of tail of VMA-311 A-4M 158166 in September 1974. Tail was red with yellow BuNos, tail code, and rudder tabs. Note black cat paw prints. (via Kaston) Below, three VMA-311 A-4Ms in flight 158149 WL/11, 158158 WL/3, and 158168 WL/15. (via Wayne Morris) Bottom, 158168 on 23 May 1975. (via Kaston)



(CVA-67). This was followed by an ORI inspection and deployment to Roosevelt Roads, Puerto Rico, to participate in Operation Rum Punch '75. After returning to Beaufort, the VSCF generator problem returned and a final fix was applied.

The Tomcats deployed to NAF China Lake in September 1975 and participated in Operation Alkalai Canyon 76 at MCB Twenty-nine Palms, CA. This was followed by a weapons deployment to Yuma and another NTPI inspection. 311 finished the year by winning the CNO Safety Award for 1975.

On 12 January 1976 the squadron was reassigned to MCAS

Above, in 1976 the Tomcat on the tail scheme replaced the original red tail with yellow trim. The rudder remained red and yellow. (Harry Gann) Below, 158160 in flight in 1976 with rocket pods on the outer wing pylons. (Harry Gann) Bottom, flight of four VMA-311 A-4Ms in 1977. (Harry Gann)







Three VMA-311 A-4Ms on a foggy morning on 15 May 1977 at MCAS El Toro. Above and bottom are early production aircraft and below is a late production A-4M with ARBS installed (William Swisher)



El Toro, CA. Upon arrival, the unit flew missions in support of Exercise Forward Pass at MCB Camp Pendleton, CA. Then came Operation Palm Tree 4-76 starting in March at

MCB Twentynine Palms. June found the squadron at NAS Fallon, NV, working with VMO-2 on close air support. Additionally, all pilots were able to fly the Shrike anti-radiation missile against the electronic warfare range as well as Sidewinder training missions.

The squadron's first West Pac deployment with the A-4M was from July 1978 through July 1979. Aircraft flown were: BuNo 154340 nose number (00), 158194 (01/450), 160038 (02/451), 160035 (03/452), 158414 (04/453), 158155 (05/454), 160032 (06/455), 158428 (07/456), 160028 (10/457), 159473 (11/460), 158166



Above, 158160 and 158427 in 1978. (Harry Gann) Below, 159473 prepares for a mission from MCAS Yuma in June 1978. (Stewart) Bottom, four VMA-311 A-4Ms in formation in 1977. (Harry Gann)







(12/461), 158427 (13/462), 158168 (15/463), 158169 (16/464), 160027 (465), ????? (466), ????? (467), 159472 (470), ????? (471), and 159780 (4XX).

The squadron re-deployed to Japan from June 1983 through December 1983 with the following aircraft: BuNo 158193 nose number (00), 158194 (01), 158196 (02), 158428 (03), 159474 (04), 159781

(05), 159471 (06), 159780 (07), 159488 (08), 158417 (09), 158192 (10), 158429 (11), 159473 (12), ????? (13), 158417 (14), 158177 (15), 159472 (16), 160023 (17), ????? (18), 159471 (19), 159487 (20), 159788 (21), 159488 (22), and 159479 (23).

A third A-4M deployment to Japan occurred from June 1986 through December 1986 and a fourth

deployment was made from December 1987 through June 1988. Aircraft used during this fourth and last deployment were: BuNo 158424 nose number (00), 158428 (01), 158479 (02), 159784 (03), 159785 (04), 159471 (05), 158193 (06), 159485 (07), 159781 (08), 159489 (09), 159779 (10), 159780 (11), 160034 (12), 158194 (13), 158191 (14), 158423 (15), 158177 (16), 158173 (17), and 158161 (18). Upon return to CONUS, the Tomcats began transitioning to the McDonnell Douglas AV-8B Harrier at their new home at MCAS Yuma in June 1988.

Above and below, A-4M 158194 was painted in an experimental scheme of medium grey upper surfaces and light grey lower surfaces in 1978. (Harry Gann) At left, by May of 1980 the medium grey had faded heavily. (Tim White via Kaston)



Above, A-4M 158166 with high viz tail markings removed taxis at Yokota AB, Japan, on 13 May 1979. (T. Matsuzaki) Below, VMA-311 A-4M 158419 minus high viz markings on 6 September 1979 at MCAS Yuma. (William Swisher) Bottom, four Tomcat A-4Ms in two-tone, blue-grey tactical low viz scheme in 1982. (Harry Gann)







Above, VMA-311 A-4M 158173 in tactical grey scheme with black tail code and Tomcat added to the tail. (Ginter) Below, 158186 at Edwards AFB, CA, on 27 October 1984. MAJ. D. M. BRANNON XO was painted below the canopy sill. (William Swisher) Bottom, 160034 at Yokota AB, Japan, on 14 May 1988. (T. Matsuzaki)



## MARINE RESERVE ATTACK SQUADRON VMA-322 "FIGHTING GAMECOCKS"



VMA-322 started its association with the Skyhawk in 1962 when it received A-4C aircraft. These were replaced in the early 1970s with A-4Es. The "Echos" gave way to the A-4M in 1984 and the squadron was decommissioned on 27 June 1992.

At top, VMA-322 A-4M 159490 in 1984. Nose number and tail code "QR" were white. (via Kaston) At right, 160042 with more readable light grey BuNo contraction on the fin in March 1984. (via Kaston) Below, 159490 in November 1991 with dark grey markings. (Bob Tourville)





## MARINE ATTACK SQUADRON VMA-324 "DEVILDOGS / VAGABONDS"



VMA-324 was the first operational Marine squadron to receive the A-4M Skyhawk. On 16 April 1971, the first five operational A-4Ms off the production line were delivered to Navy ferry pilots. Four of the five were flown to MCAS Yuma, AZ, where they were presented to LtCol George J. Ertlmeier, commander of VMA-324 "Devildogs". The fifth A-4M was the 2,500th A-4 built and it was flown to NAF Washington for a formal acceptance ceremony.

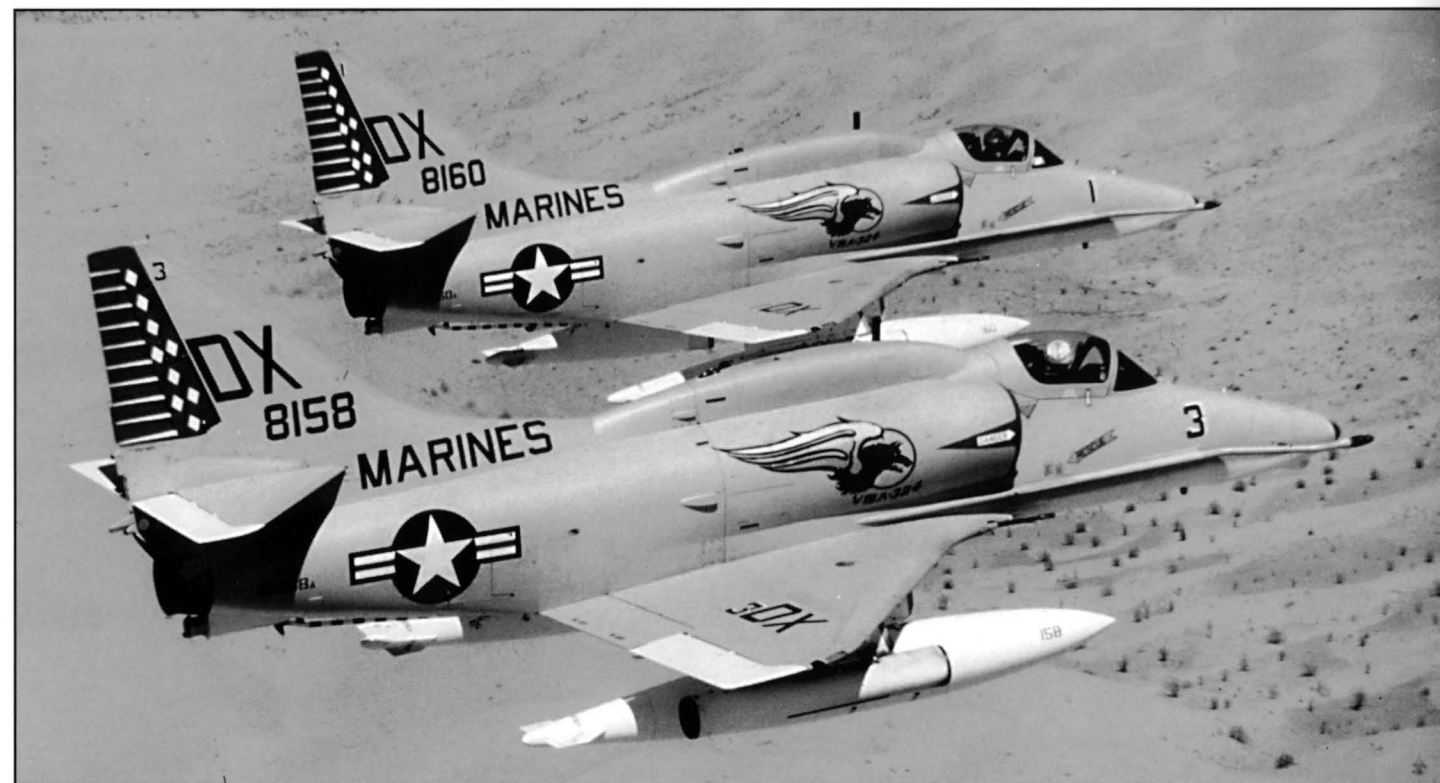
The four new A-4Ms returned to MCAS Cherry Point, SC, on 24 April 1971 after VMA-324 had completed



two weeks of weapons training at Yuma. LtCol Ertlmeier chose A-4M 158160 as his personal mount and gave it a number one as its nose number.

The squadron was deactivated on 29 August 1974 at MCAS Cherry Point with their assets and much of their personnel absorbed by VMA-311.

Above, VMA-324 squadron photo taken at MCAS Yuma in April 1971 after the squadron received its first four A-4Ms. LtCol George Ertlmeier was eighth from left in the back row. (Harry Gann) Below, Commanding Officer's A-4M 158160 (DX/1) flies wing with 158158 (DX/3) during Zuni rocket live fire training mission in April 1971. The rudders on Devildog Skyhawks were red with white stripes and diamonds. The large Devildog on the fuselage side was red with silver wings over a yellow circle. (Harry Gann)



### VMA-324

Above and at right, VMA-324 A-4M 158158 conducting Zuni rocket live fire exercises on 22 April 1971. (Harry Gann) Below, A-4M 158164 lifts off the runway at Bogue Field, NC, during a phase of Operation "Blue Axe" in 1972. (USMC)







Above, A-4Ms (DX/19 158160 and (DX/18) 158171 fly over the Arizona desert on 27 May 1972. (Harry Gann) At left, well worn 158160 at NAS Brunswick, ME on 3 August 1974 just three weeks prior to disestablished. The nickname "VAGABONDS" appeared on the hump. (via C. Kaston) Below, 158160 rolls in on target with a Walleye on the centerline on 27 May 1972. (Harry Gann)



## MARINE ATTACK SQUADRON THREE THREE ONE VMA-331 "BUMBLEBEES"



The second East Coast squadron to transition to the A-4M in 1971 was VMA-331. Based at MCAS Beaufort,

SC, the squadron received the last A-4M built on 27 February 1979.

VMA-331 deployed for the first time to Iwakuni, Japan, in their A-4Ms from December 1980 through June 1981. The following A-4Ms were assigned to the squadron during this deployment: BuNo 160262 nose number (000), 160260 (00), 160241 (1), 160251 (2), 160263 (3), 160254 (4), 158161 (5), 160256 (6), 160247 (7), 160248 (8), 160249 (9), 160250 (10), 158185 (10), 158421 (11), 159478 (12), ????? (13), 159486 (14), 160261 (15), 160257 (16), 158151 (17), 160045 (18), and 159472 (19). 160250 was lost during routine oper-

ations in March 1981.

VMA-331 deployed again to Japan from June 1982 through December 1982. After returning to CONUS, the squadron traded in their Skyhawks for McDonnell Douglas AV-8B Harrier IIs on 30 January 1985.

Below, A-4M 158180 at Kelly AFB, TX, on 11 December 1971. Tail was black with yellow-orange lettering and rudder tabs. (Norm Taylor) Bottom, VMA-331 A-4M 158176 in 1972. The squadron received sequential aircraft off the production line. (Fred Roos)







#### VMA-331

Above, VMA-331 A-4M 158174 lifts off the runway at NAS China Lake and immediately raises the landing gear on 12 May 1972. (Harry Gann)  
At left and below, VMA-331 A-4M 158182 returns from a practice bombing mission out of China Lake on 12 May 1972. (Harry Gann)



Above, A-4Ms 158176 (VL/12) and 158182 (VL/19) with practice bombs on the outer wing pylons on 12 May 1972. (Harry Gann)  
Below, 158182 in flight; practice bombs were da-glo red. (Harry Gann)  
Bottom, 158181 with spoilers and flaps extended shortly after touching down on the runway at China Lake on 12 May 1972. (Harry Gann)







### VMA-331

Above, unusual in not having a black tail, 158183 at NAS Miramar, CA, in June 1975. (via Norm Taylor) At right, 158415 leaving the USS John F. Kennedy (CVA-67) on 27 February 1975 during carrier trials. (USN) Bottom, 158181 at NAS Miramar, CA, in June 1975. (via Norm Taylor)



### VMA-331

Above and at right, VMA-331 A-4M 158185 in flight in 1976. (Harry Gann) Below, flight of four VMA-331 A-4Ms dropping Snakeyes in 1978. The squadron's aircraft were upgraded by 1978 with the Angle Rate Bombing System and fin tip antennas. Left to right 158185 VL/10, 158176, 158151 VL/17, 158167 VL/00. (H. Gann)







Above, rocket firing exercise by 158151 in 1978. (Harry Gann) Below, Commanding Officers aircraft 158167 drops napalm canister in 1978. (Harry Gann) Below, VMA-331 A-4Ms 158167 VL/00, 158151 VL/17, 158185 VL/10 and 158176 VL/16. (H. Gann)



Above, VMA-331 A-4M 160256 on deployment in Japan at Yokota AB on 8 February 1981. Wing tanks have dark yellow tips followed by black band. Nose numbers are also highlighted by dark yellow. (T. Matsuzaki) Below, 160262 with 1st MARINE AIR WING painted on the hump on 27 April 1981. (T. Matsuzaki) Bottom, when VMA-331 rotated back to CONUS they acquired VMA-223's aircraft and VMA-223 acquired VMA-331's aircraft in Japan. 160259 on 18 April 1982. (R. R. Leader via Kaston)





# OPERATIONAL MAINTENANCE DEPARTMENT (OMD) DALLAS "RANGERS"



The Operational Maintenance Department (OMD) at NAS Dallas, TX, was assigned three TA-4J Skyhawks to be used as adversary aircraft in support of the two fighter squadrons home based there. In 1987, the TA-4Js were traded in for four A-4Ms. In 1989, OMD stripped 3 of the 4 Mikes of all unnecessary equipment thus significantly enhancing their aggressor abilities. The aircraft, now dubbed "Mighty Mikes", had lost some 1,500 pounds of electronics including nose antennas and the fuselage hump, armor plating, and cabling. In early 1992, two of the aircraft were transferred out and today one remains on static display at Dallas.



Above, 159477 on 21 May 1988. (Peter Wilson) Below, 158169 from OMD Dallas at Andrews AFB on 29 September 1990. The nose numbers and star on tail were red outlined in white. (Barry Roop) Bottom, 160027 at Dallas in July 1991. (Bob Tourville)



# PACIFIC FLEET ADVERSARY FIGHTING 126 "BANDITS"



VF-126 A-4M Skyhawks flew for a brief period during the early 1990s and were replaced by the F-18 Hornet in 1994. Their primary mission was to provide adversary training for Pacific Fleet fighter squadrons. They also conducted instrument ground school refresher training for fleet and replacement fighter pilots and Out-of-Control (OOC) training in the T-2C for F-14 pilots.



At top, 158413 at NAS Miramar on 5 December 1992. All three humpbacks shown here were light grey, blue-grey and blue. (Ginter) Above, 159486 in 1992; nose numbers were red outlined by yellow. (Ginter) At right, 160039 minus hump in well-faded two-tone tactical grey scheme. (Ginter) Below, retired! 159483 at AMARC on 12 March 1994. (Doug Slowiak)





## NAVAL FIGHTER WEAPONS SCHOOL "TOP GUN"



The first Top Gun class started on 3 March 1969 at NAS Miramar, CA. Starting with T-38As, the unit has used the following aircraft: A-4Es, A-4Fs, F-5Es, F-5Fs, F-16Ns, F/A-18s and for a short period of time A-4Ms. The Naval Fighter Weapons School is now based at NAS Fallon, NV.



At top, NFWS A-4M 160045 nose number 50 on the Top Gun line at NAS Miramar in 1994. The aircraft was painted in two shades of brown and one of tan with white undersides. (Ginter) Above right, NFWS A-4M 158171 nose number 51 in light grey and green color scheme in 1994. (Ginter) At right, overall grey NFWS A-4M 158426 on the ramp at Top Gun, NAS Miramar in 1994. (Ginter) Below, A-4M 160045 in retirement at AMARC in March 1995. (Bob Shane via Kaston)



## KUWAITI A-4KU SKYHAWKS

In November 1974 Kuwait ordered 30 single-seat A-4KUs (BuNos 160180-160209) and 6 two-seat TA-4KUs (160210-160215). These were new construction aircraft identical to USMC A-4Ms except for some weapons capabilities. Shrike, Walleye, and nuclear capabilities were deleted, however, the aircraft did have the Hughes Angle-Rate-Bombing System installed and could carry Maverick missiles.

The single-seat A-4KU first flew on 20 July 1976 and the first two-seat TA-4KU flew on 14 December 1976. Kuwaiti personnel were trained at NAS Lemoore, CA, and at MCAS Yuma, AZ. The aircraft were assigned to 9 and 25 squadrons at Ahmed al Jabar AB.

It was reported that 6 A-4KUs and 1 TA-4KU were lost prior to Desert Storm. On 2 August 1990, Iraq invaded Kuwait and all flyable Skyhawks escaped to Saudi Arabia. These aircraft, with "Free Kuwait" painted on the fuselage side, operated from Dhahran AB. On 2 August, the opening day of the war, a radar guided SAM missile claimed the first and only A-4 victory of the war. Ultimately, the Kuwaiti Skyhawks would fly 651 missions against Iraq.

After the war, FA-18C/D Hornets replaced the Skyhawks, which were put in storage until going to Brazil in 1998.

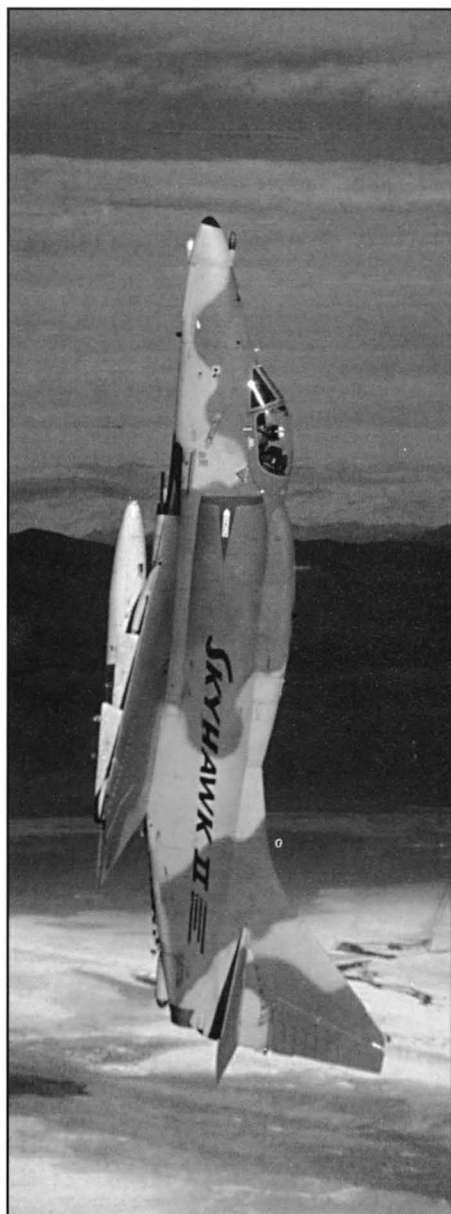


Above, two A-4KUs over the southwest desert prior to delivery to Kuwait. (Harry Gann) Below, Kuwaiti A-4KU with FREE KUWAIT applied to the fuselage side after the Gulf War. (via Burger) Bottom, A-4KU 160192 also after the Gulf War. (Mark Ropcheck)





## ISRAELI AIR FORCE A-4N SKYHAWK II



On 4 March 1971, the sale of 117 A-4N aircraft to Israel was approved by the White House. The "N" was basically a standard A-4M airframe and engine that would be combined with 30 mm DEFA cannons and Israeli-made avionics. The HUD system, designated "TAAL", was combined with a navigation / attack bombing package called "Crystal". The electronic suite became known as "TAAL-Crystal". During 1982-83 the Hughes ARBS system was installed on the A-4Ns. An extended tail cone was also fitted to the A-4N to hinder infrared acquisition by heat seekers.

The aircraft's first flight took place on 8 June 1972 and deliveries to Israel started in November. BuNos assigned were: 158726-158743,

159035-159052, 159075-159098, 159515-159526, 159799-159824, 159527-159545.

The A-4Ns were operated by the Flying Tiger Squadron, the Flying Wing Squadron, the Flying Dragon Squadron, the Golden Eagle Squadron, and the Smashing Parrot Squadron. After many years of intense combat operations the single seat Skyhawks are all but gone from service in Israel.

At left, prototype A-4N 158726 goes vertical in 1973. (Harry Gann) Below, 158726 was painted brown, olive, and light tan. Bottom, Bullpups and iron bombs on 158726. (McDonnell Douglas)



Above and below, Flying Tiger Squadron A-4N 310 in 2001 with refueling pod. (Israeli Air Force) Bottom, Flying Tiger squadron A-4N 438 landing with eight Mk 82 bombs in the late '80s. (Israeli Air Force)





## ARGENTINE A-4AR "FIGHTINGHAWKS"

### LOCKHEED MARTIN AIRCRAFT SERVICES ARGENTINE A-4AR PROGRAM

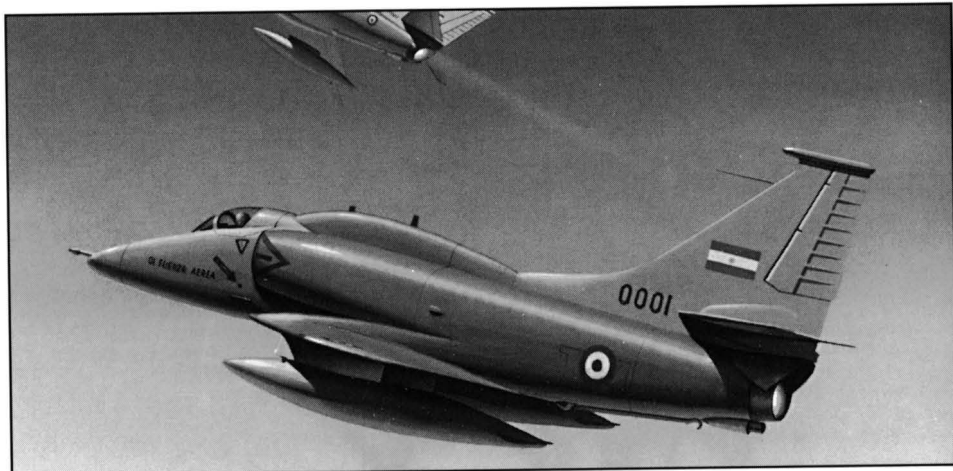
The Argentine Republic began negotiations with the United States Navy in October 1993 for purchase of surplus ex-Marine A-4Ms. Acquisition of 36 aircraft and spares was approved in 1994. 36 A-4Ms and 5 OA-4M two-seaters would be delivered for rework and upgrade; these were:

A-4Ms: 158161, 165, 167, 171, 178, 193, 413-414, 417, 419, 423, 426, 428-429, 159470-473, 475, 478, 483, 486-487, 493, 778, 780, 783, 160025, 029, 032, 035, 039-040, 042-043, and 045.

OA-4Ms: 153531, 154294, 328, 645, and 651.

From these airframes 32 A-4Ms and 4 OA-4Ms would become operational.

Lockheed Aircraft Service Company, later Lockheed Martin Aircraft Services (LMAS), was contracted to refurbish and tailor the aircraft to the specific requirements of the Fuerza Aera Argentina (FAA), the Argentine Air Force. The refurbish-



ment included depot level inspections and rewiring, engine overhaul (under a separate \$200 million 3-year contract with Greenwich Air Services, Miami, FL), avionics upgrade, pilot and mechanic training, spares provisioning and technical documentation.

The avionics upgrade consisted of a Westinghouse ARG-1 fire control radar, a downgraded version of the F-16's AN/APG-66 multi-mode radar, active-matrix liquid crystal displays (Allied Signal), HUD (Sextant), an inertial navigation system, and an on-board computer mission planning system (Horizon Technology Inc.). Also included in the upgrade was the HOTAS (hands-on throttle and stick)

Above, artist's impression of A-4AR. Below, the first A-4M arrives at Ontario, CA, on 1 August 1995 for conversion to the A-4AR. Aircraft has had the nickname "Gaucho-01" applied below the canopy rail, and has received its Argentine tail markings and serial number C-906. Aircraft was painted in blue/gray scheme. (Lockheed Martin)

and OBOGS (on-board oxygen generation system).

Initially 18 aircraft were to be finished at the LMAS facility at Ontario, CA, and 18 under subcontract with Lockheed Aircraft Services Argen-



Above, "Gaucho-02" landing at Ontario on 4 August 1995. It carries Argentine serial number C-905. At right, LMAS workshop at Ontario was a 36,000 square foot hangar. (Lockheed Martin)

tina, S. A. (LAASA) at Cordoba, Argentina. However the program was modified with only 9 aircraft completed at LMAS Ontario and 27 aircraft completed in Argentina.

"Gaucho One", the first Argentine A-4M to arrive at LMAS Ontario, landed at 9:32 a.m. on 1 August 1995 after a ferry flight from Davis-Monthan AFB where it had been in storage. "Gaucho Two" was ferried in on 4 August and the remaining aircraft were trucked to Ontario.

The first 5 aircraft were delivered on 18 December 1997 to El Palomar AB and were officially accepted on 23 December. Of the 5 aircraft delivered, 4 were A-4R single-seaters (C-906, C-908, C-917 and C-918) and 1 was a TA-4AR two-seater (C-903). All 5 aircraft were assigned to Grupo 5 de Caza of V Brigada Aerea at Pringles AB, Villa Reynolds City, San Luis province. By May 1998, another 4 A-4ARs were accepted by Argentina with one staying at Palmdale, CA, for a time for software interfacing.

The first Argentine upgraded aircraft was accepted on 22 July 1998. The remaining 26 aircraft would be delivered by the end of 1999.







Above, first five Argentine Fightinghawks prepare to take off on their ferry flight to Argentina. The two-seat TA-4AR is in the foreground. (Lockheed Martin) At left, photo of four of the five Argentine Fightinghawks taken over the California desert during the delivery flight. (Lockheed Martin) Below, A-4M airframes await conversion at the Lockheed Martin conversion facility (LAMAS) in Cordoba, Argentina. (Lockheed Martin)



Above, belly view of Argentine A-4AR banking away from the camera ship. Note the fake canopy painted on the lower forward fuselage. (Louis Santos) At right, closeup of tail of C-906 in its Argentina hangar in 2001. Note the Fightinghawk emblem that covers much of the tail. (Louis Santos) Below, C-921 poses in the Argentine sun in 2001. Argentine aircraft are painted in a two-tone bluish-gray scheme with white landing gear and interior gear wells. Blade antenna on top of the hump is black. Intake lip is dark grey. (Louis Santos)





## SKYHAWKS FOR BRAZIL

The Brazilian Navy's aircraft carrier, the ex-Vengeance class Minas Gerais, had been without fixed-wing assets since 1965. Then in 1998, 26 ex-Kuwaiti Skyhawks were acquired. Brazil received 20 single-seat A-4KUs, 3 two-seat TA-4KUs and 3 spare parts airframes. The single-seat A-4KUs were redesignated AF-1s (serial numbers N1001-N1020) and the two-seat TA-4KUs were redesignated AF-1As (serial numbers N1021-N1023) by the Brazilian Navy. The purchase included 65,000 spare parts and nineteen extra engines, and was initially signed in December 1997. These low-time aircraft were overhauled in Kuwait by Boeing and delivered to Brazil from July through September 1998.

The first aircraft was revealed to the public on 2 October 1998 and carried the Brazilian serial number N-1001 on the fuselage side. The aircraft entered service with the First Interceptor and Attack Squadron (VF-1) at NAS Sao Pedro D'Aldeia near Rio De Janeiro.

Brazilian pilots were sent to VT-7 at NAS Meridian where they were part of the last TA-4 class. At least one pilot qualified aboard the carrier in the TA-4J with the remainder qualifying in the T-45.

In 2001, Brazil acquired the French aircraft carrier Foch and replaced the Minas Gerais with it. The Foch was renamed the Sao Paulo and flight operations started in September 2001. In October, inflight refueling training was conducted with a Brazilian Air Force KC-130. In December, the first AIM-9H was fired from a Brazilian Skyhawk. Currently the squadron is staffed with only about 40% of its required pilots.

In April 2002 the carrier deployed to Argentine waters and hosted their A-4ARs for two weeks. Further joint exercises were conducted in May

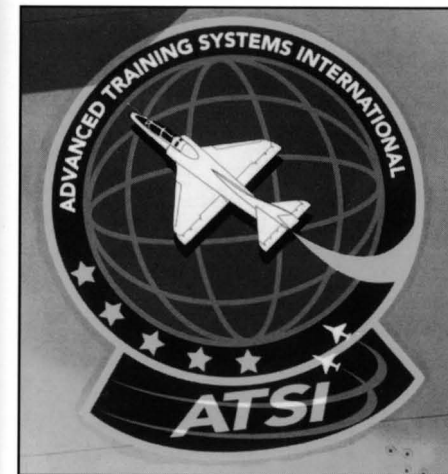
The Brazilian Navy is currently taking bids for upgrade work on these aircraft.



Above, 2 October 1998 rollout of Brazilian Navy AF-1 N1001. It carries a centerline tank and four underwing Sidewinders. Aircraft is blue-grey with white landing gear and interior gear wells. National Insignia is blue-yellow-blue. (via Harry Gann) Below, Brazilian carrier OPS. (Brazilian Armed Forces)



## ADVANCED TRAINING SYSTEMS INTERNATIONAL (ATSI)



By John Wycoff

"Our mission is to provide services to the Navy and Air Force, that they used to do for themselves, but due to budget cutbacks, and lack of assets, can no longer do on the scale that they once did. We are also negotiating contracts for pilot training for foreign governments.

We have eleven A-4Ns and three TA-4Js. The planes were purchased from Israel because the US government cannot sell surplus attack type aircraft to a civilian company. However, State Department approval can be obtained to purchase them from out-of-country.

This job is definitely a challenge, especially for an avionics type such as myself. For operations in the US we must incorporate a TACAN system and an AJB3 attitude indicating system into the N models. The Israelis used an INS system called Krystal, which is no longer supportable, and even if it were, would not function in this hemisphere.

The first two Ns we received back in May 2001 were being flown by the Israelis on a regular basis, up to the time we took ownership. The remaining eight Ns and two of the Ts had been sitting in the "bone yard" over there for about seven years. The third T was sitting in front of the Israeli Air Force Museum for the past few years.

We had a 14-man crew from New



Top to bottom, ATSI A-4Ms N260WL, N261WL, N262WL, N263WL, at Williams Gateway in 2002. All four are painted in standard Israeli camouflage scheme of FS34227 green, FS30219 brown and FS33531 sand on the upper surfaces and FS36375 light ghost grey on the undersides. (Doug Slowiak)







Zealand who put them through overhaul before we receive them here. Once two or three are ready we send pilots to Israel and fly the birds back.

Now you know a bit about us and our mission. How I ended up here is a whole different story! It's a big challenge, but I am having a ball, doing something that I would have never dreamed that I would get to do again!"

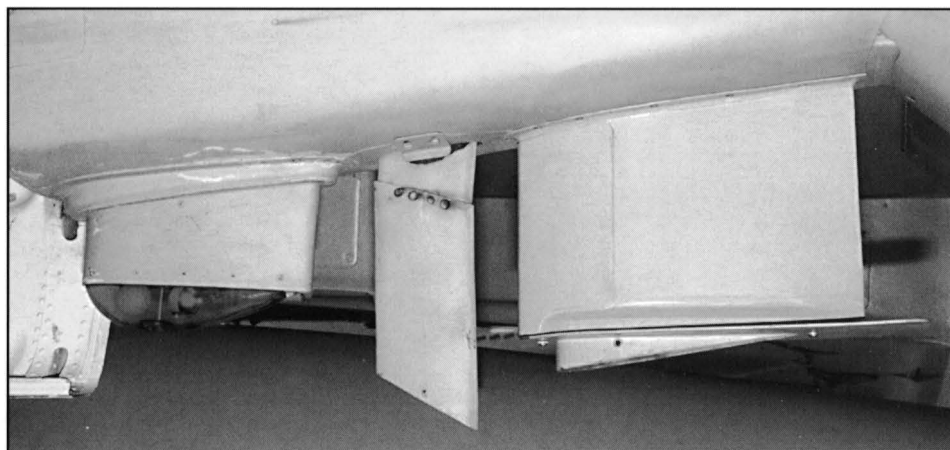
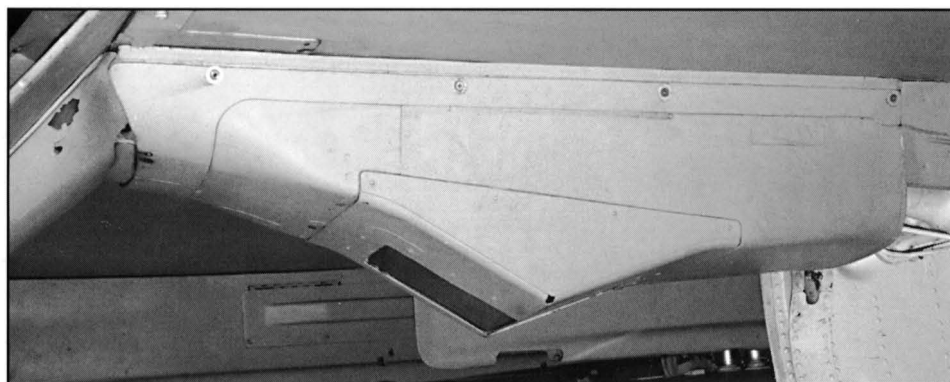
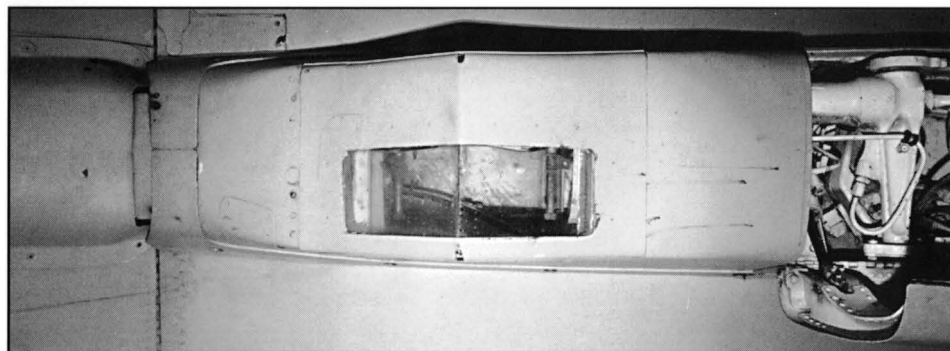
The CEO of ATSI is Larry "Hoss" Pearson and the company calls Williams Gateway Airport, former site of Williams AFB, its home. It is administered by the Williams Gateway Airport Authority Board. The authority is owned by the cities of Mesa, Gilbert, Queen Creek and the Gila River Indian Community.

Above left, N264WL and N265WL in Israeli camouflage scheme. At left, all grey N266WL has white landing gear and gear doors. Below, N267WL ex-Israeli Defense Force #350 in two-tone grey scheme. (all photos Doug Slowiak 2002) Above right, ATSI N267WL right side view July 2002. At right and below, two-tone grey N268WL in July 2002. All ATSI A-4Ns retain the extended exhaust pipe that was unique to this model. (Doug Slowiak)

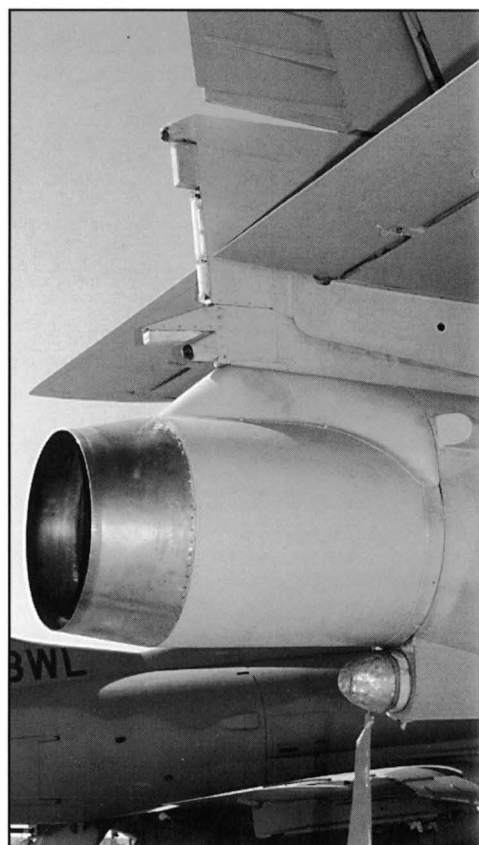




## A-4N UNIQUE FEATURES



Above, upper nose on ATSI A-4N. Above left, two views of aft left main gear fairing containing the bomb damage assessment camera. At left, aft right main gear fairing showing vents and beacon. Below, extended A-4N tailcone designed to help defeat infrared heat seekers. Note parachute housing and antennas attached to the aft end of the vertical tail. (all photos 2002 by Doug Slowiak)

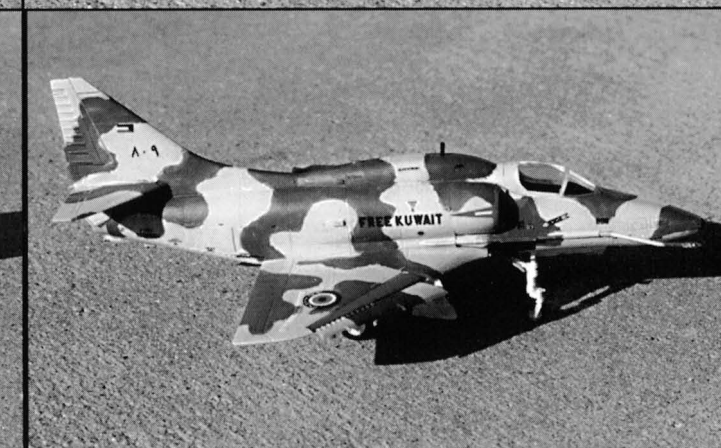
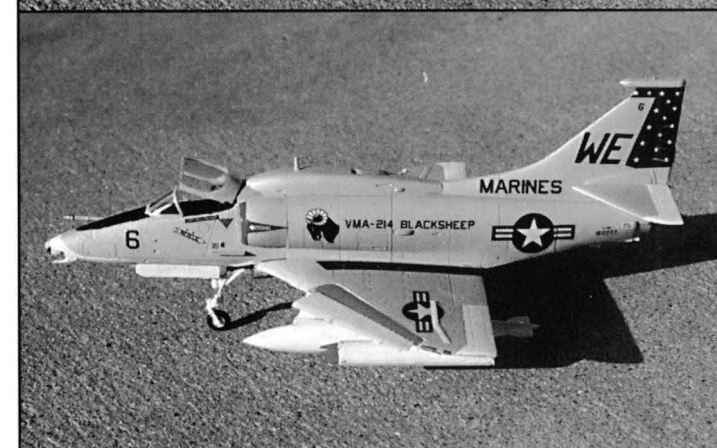


## FUJIMI 1/72 SCALE A-4M AND A-4KU KIT

Fujimi has made a complete series of A-4 Skyhawk kits, usually having common fuselages from the intakes back, and having forward fuselage plugs for the nose and canopy sections. The fit of these nose sections proves somewhat difficult and requires a fair amount of work.

They have made a late model A-4M kit with ARBS nose which provides decals for four different aircraft. These were for both a low-viz and a high-viz VMA-311 aircraft, and both a low-viz and high-viz VMA-214 aircraft. The kit includes choice of three drop tanks and two Zuni rocket pods. The kit also provides optional position speed brakes, slats, flaps, and canopy.

Fujimi also made a Kuwaiti A-4KU kit which externally equates to the early version of the A-4M. It contains decals for two different Kuwaiti aircraft, two Israeli A-4Ns without tail-cone extension, and two VMA-324 A-4Ms.





The first A-4M kit on the market was the Matchbox A-4M. It was crude with heavy panel lines and not very accurate. If you come across one of these kits, keep looking until you find a Fujimi kit.

The kit originally had decals for VMA-324 and an Israeli A-4N. The second issue of the kit included VMA-324 and VMA-331 decals. The model depicted the early version of the "M" and a pilot figure and two Bullpup missiles.



The A-4M kit has decals for reserve squadron VMA-131 Diamondbacks A-4M 158182 in 1990 and for an Argentine A-4AR in year 2000. Weapons choices are three drop tanks, two Sidewinders for use on the outer wing pylons, twelve Snakeyes, with centerline ejector rack for six Snakeyes and two outer wing ejector racks for three Snakeyes on each rack.

The A-4N kit has decals for four different Israeli squadrons; Flying Wing squadron 1983, Valley squadron 1982, Flying Dragon squadron 1985 and Advanced Flying School 1990. Also included are two Brazilian schemes; the delivery scheme and the 1999 operational scheme. This kit comes with three drop tanks, two Sidewinders and twelve Mk. 82 iron bombs.

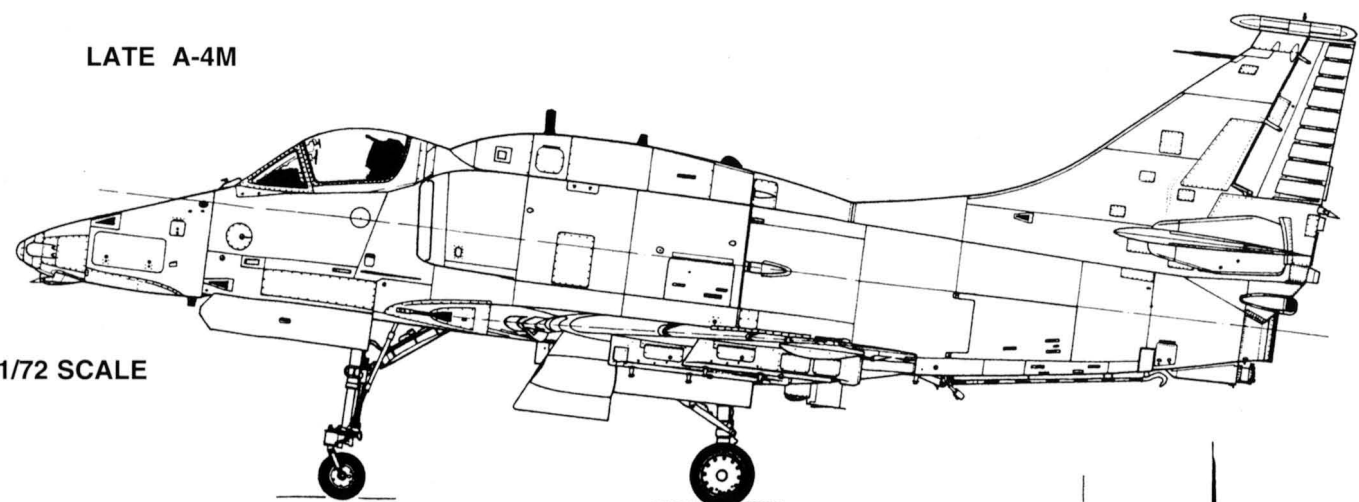
The model below was built from Hobby Craft's first shipment of kits, which was missing the parts tree that had the pieces for the ARBS nose. Rather than wait for parts, we built the kit as an early A-4M with decals from CAM. Although I am extremely grateful that this kit was produced, I am not happy with the shape of the canopy and the fin tip or the heavy panel lines.

MODEL BY LEE REINITZ





LATE A-4M



1/72 SCALE

THE PILOTS SEAT IN THIS AIRPLANE IS  
LOADED WITH AN EXPLOSIVE  
CARTRIDGE FOR OPERATION  
AND MAINTENANCE SEE  
FLIGHT MANUAL AND  
MAINTENANCE  
INSTRUCTION  
MANUAL

FUEL NOZZLE GROUND

**CAUTION**  
EXPLOSIVE  
CANOPY  
RELEASE  
EMERGENCY  
ONLY

## RESCUE

GLASS HANDLE WITH CARE  
DO NOT LACQUER OR  
ENAMEL

DO NOT  
PAINT

DO NOT PAINT

**WARNING**

CAUTION: DRAIN WATER FROM  
LINES AND TANKS BEFORE FLU

AND BEFORE REFUELING

WATER DRAIN FITTINGS ARE  
LOCATED ON LOWER SURFACE  
WHERE INDICATED THIS 42

# MARINES

— STA 232.75

Technical drawing of a star-shaped structure, likely a component of a vehicle or aircraft. The drawing includes the following dimensions and labels:

- Top left: 24 3/4 INCHES, 4 INCHES
- Top center: 16 7/8 INCHES, RADIUS
- Top right: 1 7/8 INCHES, 6 INCHES, 4 INCHES, 2 INCHES
- Right side: 1 A-4 M, 158149B, 1 INCH
- Bottom center: CAUTION, LG OR VENT
- Bottom right: STA Y413.125

HIGH VISIBILITY PAINT SCHEME CHEAT LINE BETWEEN GULL GREY UPPER SURFACES AND WHITE LOWER SURFACES

STAC 17.430  
 STAC 17.430  
 STAC 17.430

### AILERON

SLAT

WING

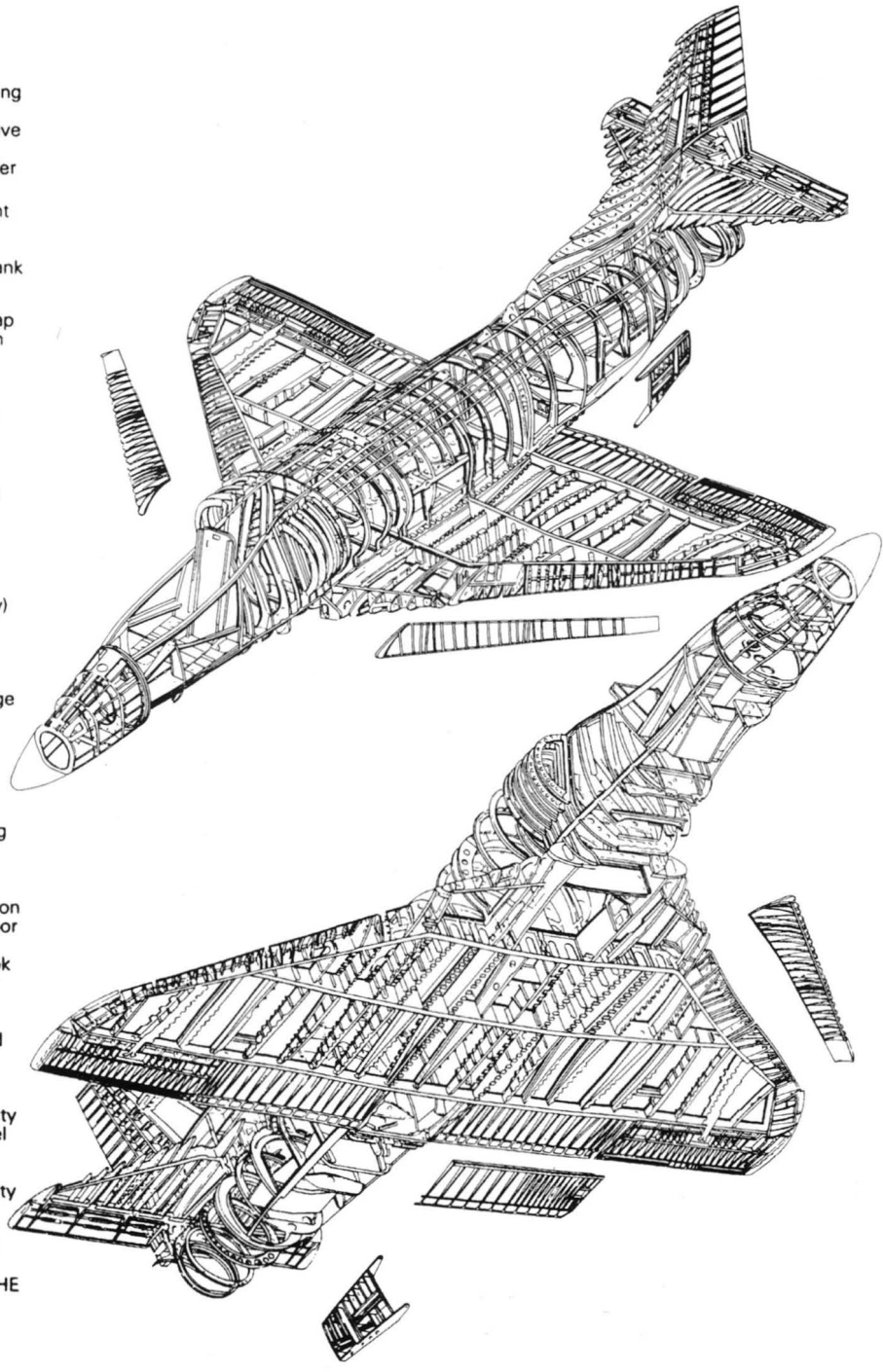
### HORIZONTAL STABILIZER

## ELEVATOR

## EARLY A-4M



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|----------------------------------------------------------------------|----------------------------------------------------------------------------------------|-----------------------------------------------------------|
| 1 Fixed inflight-refuelling probe                                    | 61 Electrical system power amplifier                                                   | 120 Arrestor hook hydraulic jack                          |
| 2 Nose ECM recording and suppression aerials                         | 62 Engine accessory drive gearbox                                                      | 121 Control cable runs                                    |
| 3 Angle Rate Bombing System (ARBS) laser seeker head                 | 63 Wing spar attachment fuselage double frame                                          | 122 Inertial platform                                     |
| 4 Hinged nose compartment access door                                | 64 Engine mounting trunion                                                             | 123 Ventral pressure refuelling connection                |
| 5 Laser seeker system electronics                                    | 65 Engine fuel system access panel                                                     | 124 Central hydraulic flap drive linkage                  |
| 6 Electronics cooling air inlet                                      | 66 Pratt & Whitney J52-P-408 turbojet                                                  | 125 Port upper surface spoiler                            |
| 7 Pitot tube                                                         | 67 Dorsal avionics bays                                                                | 126 Spoiler hydraulic jack                                |
| 8 Avionics access panel                                              | 68 Compressor bleed air exhaust duct                                                   | 127 Ventral anti-collision light                          |
| 9 APN-153(V) navigation radar                                        | 69 Upper TACAN aerial                                                                  | 128 Wing rib construction                                 |
| 10 Lower TACAN aerial                                                | 70 Starboard wing integral fuel tank (total wing tank capacity 560 US gal/2120 litres) | 129 Stringer construction                                 |
| 11 Communications electronics                                        | 71 Wing tank access panels                                                             | 130 Port wing integral fuel tank (single tank tip-to-tip) |
| 12 Cockpit front pressure bulkhead                                   | 72 Slat guide rails                                                                    | 131 Rear spar                                             |
| 13 Pressurization valve                                              | 73 Starboard automatic leading-edge slat (open)                                        | 132 Port split trailing edge flap                         |
| 14 Windshield rain dispersal air duct                                | 74 Wing fences                                                                         | 133 Port aileron construction                             |
| 15 Rudder pedals                                                     | 75 Vortex generators                                                                   | 134 Aileron trim tab                                      |
| 16 Angle-of-attack sensor                                            | 76 Starboard navigation light                                                          | 135 Tip fairing                                           |
| 17 Air conditioning refrigeration plant                              | 77 Wing tip communications aerial                                                      | 136 Aileron horn balance                                  |
| 18 Nosewheel door                                                    | 78 Aileron horn balance                                                                | 137 Wing tip antenna fairing                              |
| 19 Control system access                                             | 79 Starboard aileron                                                                   | 138 Port navigation light                                 |
| 20 Cockpit floor level                                               | 80 Split trailing-edge spoiler (open position)                                         | 139 LAU-10A Zuni rocket launcher                          |
| 21 Pilot's side console panel                                        | 81 Starboard split trailing-edge flap (down position)                                  | 140 5-in (12.7-cm) folding fin rocket                     |
| 22 Engine throttle                                                   | 82 Anti-collision light                                                                | 141 AGM-12 Bullpup air-to-ground missile                  |
| 23 Control column                                                    | 83 Cooling air exit louvres                                                            | 142 Missile launcher rail                                 |
| 24 Instrument panel shroud                                           | 84 Rear fuselage double frame break point                                              | 143 Outboard wing pylon (1,000 lb/454 kg capacity)        |
| 25 Head-up display (HUD)                                             | 85 Engine firewall                                                                     | 144 Port automatic leading edge slat (open)               |
| 26 Windscreen panels                                                 | 86 Cooling air intake                                                                  | 145 Wing fences                                           |
| 27 AIM-9L Sidewinder air-to-air missile                              | 87 VHF aerial                                                                          | 146 Vortex generators                                     |
| 28 Missile launch rail                                               | 88 Upper fuselage stringers                                                            | 147 Aileron control rod linkage                           |
| 29 D-704 flight refuelling pack containing 300 US gal (1135 litre)   | 89 Fin root dorsal fairing                                                             | 148 Leading edge ribs                                     |
| 30 Cockpit canopy cover                                              | 90 Remote compass flux valve                                                           | 149 Wing centre spar                                      |
| 31 Face blind firing handle                                          | 91 Rear electronics bay cooling air inlet                                              | 150 Main undercarriage hydraulic retraction jack          |
| 32 Ejection seat headrest                                            | 92 Fin rib construction                                                                | 151 Undercarriage leg pivot mounting                      |
| 33 Safety harness                                                    | 93 Fin spar attachment joint                                                           | 152 Slat guide rail fuel sealing can                      |
| 34 McDonnell Douglas Escapac IG-3 zero-zero ejection seat            | 94 Rudder hydraulic jack                                                               | 153 Port mainwheel                                        |
| 35 Anti-g valve                                                      | 95 Artificial feel spring unit                                                         | 154 Mainwheel door                                        |
| 36 Cockpit insulation and fragmentation blanket                      | 96 Pitot tube                                                                          | 155 Position of landing lamp on starboard mainwheel door  |
| 37 Rear pressure bulkhead                                            | 97 Fin tip ECM antenna housing                                                         | 156 Approach lights                                       |
| 38 Emergency canopy release handle                                   | 98 Externally-braced rudder construction                                               | 157 Retractable catapult hook                             |
| 39 Nose undercarriage leg strut                                      | 99 Fixed rudder tab                                                                    | 158 Cranked wing front spar                               |
| 40 Steering linkage                                                  | 100 Tail navigation light                                                              | 159 Aileron servo control                                 |
| 41 Nosewheel                                                         | 101 ECM antennas                                                                       | 160 Mk 12 20-mm cannon                                    |
| 42 Leg shortening link                                               | 102 Tailplane trim jack                                                                | 161 Spent cartridge case and link ejector chutes          |
| 43 Hydraulic retraction strut                                        | 103 Tailplane sealing plate                                                            | 162 Mainwheel well                                        |
| 44 Emergency wind-driven generator                                   | 104 Elevator hydraulic jack                                                            | 163 Centre-line pylon (3,575 lb/1622 kg) capacity         |
| 45 Port cannon muzzle                                                | 105 Tailpipe fairing                                                                   | 164 150-US gal (568-litre) fuel tank                      |
| 46 Intake gun gas shield                                             | 106 Port elevator                                                                      | 165 Inboard wing pylon (2,240 lb/1016 kg) capacity        |
| 47 Port air intake                                                   | 107 All moving tailplane construction                                                  | 166 400-US gal (1514-litre) long-range fuel tank          |
| 48 Boundary layer splitter plate                                     | 108 Elevator horn balance                                                              | 167 Snakeye 500-lb (227-kg) retarded bomb                 |
| 49 Self-sealing fuselage fuel cell, capacity 240 US gal (908 litres) | 109 Jet pipe exhaust nozzle                                                            | 168 Mk 83 1,000-lb (454-kg) HE bomb                       |
|                                                                      | 110 Brake parachute housing for 16-ft (4.88-m) diameter ribbon type chute              |                                                           |
|                                                                      | 111 Brake parachute release                                                            |                                                           |



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|-------------------------------------------------------|-----------------------------------------------------------------|
| 50 Fuel system piping                                 | linkage                                                         |
| 51 Canopy hinge cover                                 | 112 Insulated jet pipe                                          |
| 52 Starboard air intake duct                          | 113 Electronics bay heat shield                                 |
| 53 Fuel system gravity filler cap                     | 114 Rear electronics bay automatic flight control system (AFCS) |
| 54 UHF aerial                                         | 115 Port airbrake (open)                                        |
| 55 Electronics cooling air inlet                      | 116 ATO rocket attachment hardpoints                            |
| 56 Engine-driven generator                            | 117 Airbrake hydraulic jack                                     |
| 57 Constant-speed drive unit                          | 118 2.65-US gal (10-litre) liquid oxygen converter (LOX)        |
| 58 Bifurcated intake duct                             | 119 Arrestor hook (down position)                               |
| 59 Reel type ammunition magazine (200 rounds per gun) |                                                                 |
| 60 Intake compressor face                             |                                                                 |

